

JPRS-UEA-88-010
15 APRIL 1988



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JPRS Report

Soviet Union

Economic Affairs

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Economic Affairs

JPRS-UEA-88-010

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ECONOMIC POLICY, ORGANIZATION, MANAGEMENT

Enterprise State Acceptance Official Resists Party Involvement

18200094 [Editorial Report] Moscow IZVESTIYA in Russian on 16 February 1988 carries on page 2 a 1,900-word article by M. Krushinskiy and G. Shipitko, IZVESTIYA special correspondents, dateline Osh Oblast titled "Cannot Cope? To State Acceptance! How a Plant Party Committee and City Party Committee Tried to Lead by Nondepartmental Control." The article explains how the director of an electric lightbulb plant in Mayli-Saya, Kirghizia, was replaced due to the enterprise being "on the brink of an economic catastrophe." According to State Acceptance personnel at the plant, Mendysh Zhakipovich Zhakipov had permitted shoddy goods to go out, promising to improve quality, but never did anything. A problem arose when the plant State Acceptance director N. Krakovskiy turned Zhakipov down for an opening in his shop. This was followed by a "request" signed by city party committee first secretary Galina Alekseyevna Tkachik to put Zhakipov in the vacant post and to inform the committee when this was done. The plant party committee, headed by Pavel Nikolayevich Gotsenko, was divided on the issue at first; it then issued an ultimatum that Zhakipov be hired for the position, ignoring the position taken by plant State Acceptance workers and Gosstandart officials in Moscow.

Krakovskiy stubbornly refused, and was sternly reprimanded for daring to bring the Moscow department of State Acceptance into the "internal" affairs of Mayli-Saya. He was then further criticized by Gotsenko: "I personally believe that there is no room for such a person in the CPSU" due to his having demonstrated scorn for the statutory requirements for a communist and the principles of democratic centralism. "Think what would happen if everyone began to flout the decisions of party organs!"

The authors note that economic accountability contributes to the desire of factory workers to get themselves out of a jam, as the town is 80 percent dependent on the factory's success. "The way [to success] is well known: technical renewal and great improvement in quality. But some one, it appears, is tempted by another, easier way: to make 'external' control even a little bit more tractable. Can one not easily breed the monolithic unity of these central department representatives? By introducing into their ranks a man who could control the controllers in the name of the controlled?"

"Of course, no one said anything of the sort to us. On the contrary, they pronounced very believable words on party discipline, on democratic centralism, on the leading role of the CPSU in our society's life."

INVESTMENT, PRICES, BUDGET, FINANCE

Komin Stresses Enterprise Role in Settling Contract Prices

18200028a Moscow *EKONOMICHESKAYA GAZETA*
in Russian No47Nov 87 p 2

[Article by A. Komin, doctor of economic sciences: "Law Concerning an Enterprise and Price Formation"]

[Text] In the development of economic control methods, key importance is attached to price formation. Prices must point an enterprise towards the production of technically improved products, improved quality and the adoption of optimum decisions in the organization of cost accounting operations for enterprises. The June(1987) Plenum of the CPSU Central Committee resolved to carry out not just a partial improvement in the price system, but rather to implement a radical reform in price formation and a mutually coordinated restructuring of the entire price economy. Here we have in mind not only those price levels which reflect the socially needed expenses but also the system for establishing them.

The new economic mechanism and the expansion in the rights of enterprises require a new organization for price formation. Certainly, the prices for the more important products must be determined on a centralized basis together with the development of an all-state plan. At the same time, the sphere for the use of contractual prices should ideally be expanded in the new mechanism. This will promote an expansion in the rights and economic independence of enterprises.

Expansion of Rights

The restructuring of economic administration will necessarily touch upon the organization of price formation.

The centralization of control has inevitably required centralization in the establishment of prices. The rights of enterprises in the area of establishing prices have been extremely limited. They approved prices mainly for products produced on the basis of one-time orders. However, these products were limited to semi-finished goods, parts, special instruments and goods for a limited range of consumers. The proportion of products, the prices for which are still being approved by the enterprises, amounts to only 5 percent of the volume of all industrial output. In conformity with the law, the rights of enterprises in the sphere of price formation have been expanded considerably.

Enterprises are authorized to employ prices in accordance with agreements reached with consumers (contractual prices) for products of a production-technical nature produced on the basis of one-time or individual orders, for new products or products developed for the very first time, for new non-productive consumer goods

and also for individual types of food goods, sold by agreement with the trade organizations for a period of up to 2 years in accordance with an established list. The organs of state price formation establish the order to be followed for determining the contractual prices and for controlling their use.

It is readily apparent that the nomenclature on the basis of which the enterprises will establish their contractual prices is very broad. Naturally, the prices for industrial products of a general industrial nature and for the more important types of consumer goods must be approved by the organs of price formation. The State Price Committee will determine the prices only for structure-determining types of products. All other nomenclature must be turned over to local elements, the chief ones of which will be the enterprises.

An expansion in the rights of enterprises in the area of establishing prices is of profound economic importance. First of all, democratization in the approval of prices logically derives from the overall program for restructuring the economic control mechanism and, secondly, in the absence of such rights a strengthening of the economic control methods or an increase in the role played by commodity-monetary relationships would be unthinkable.

Contractual Price

The extensive use of contractual prices introduces new economic and legal aspects into the price formation process. By its very economic nature, a contractual price must take into account the interests of the producer and consumer to a better degree and more completely and thus it must serve as a bonding element between a producer and consumer. A very important principle of price formation, such as price flexibility, is manifested to a better degree in contractual prices. Indeed, the economic activity of a price has a direct effect on the final results and economic interests of both the producer and consumer.

In the case of products of a production-technical nature, contractual prices must be established for the same types available to a special purpose consumer or which have a limited sphere of use, for example tractors and agricultural machines, power engineering equipment, equipment for the light and food industry and transport equipment with the exception of automobiles. In the case of consumer goods, contractual prices must be established as a rule for the final products. This applies first of all to goods of a cultural-domestic and economic nature, furniture, dishwear, clothing and footwear. Upon the expiration of 2 years, the contractual prices must be reapproved by the organs of price formation. In the process, it is not mandatory for contractual prices to be changed during the course of their reapproval. If they are

economically sound and meet the interests of the producers and consumers, then such prices will simply be extended and will be continued in the future as permanent wholesale or retail prices.

Contractual prices possess the advantage that, first of all, they are determined in an efficient manner and, secondly, they are better able to reflect the interests of both production and consumption.

The extensive use of contractual prices solves the problem of raising the economic role played by a consumer in influencing production and it ensures his control over the price level and his direct participation in the establishment of prices and rates.

Contractual prices for products of a production-technical nature, machines and large items of equipment must be established commencing with the issuing of the technical task for the design and production of the new equipment. A customer for such equipment must not only define the technical-economic parameters for the new product, but in addition he must agree to the accepted price at which this product will be utilized effectively in production. Such a price is referred to as a limiting price.

Limiting Price

The economic essence of a limiting price is first of all the economic effectiveness of use of a product by the consumer. Today it is necessary to create a system for the establishment of limiting and contractual prices which will preclude the possibility of a consumer inflating prices by means of high expenditures. It is precisely the desire to "pump up" prices by means of expenditures that has brought about expenditure price formation. Under the new conditions, prices must be determined not by expenditures but rather by the economic effect. The higher the economic effect, the higher will be the prices. Moreover, the prices must be determined per unit of usefulness (power, productivity, freight-carrying capability and other indicators).

From the moment that a limiting price is established, a planner must not display concern as to how to protect this price by means of high expenditures. A limiting price must appear as a firm guarantee for the future price if it guarantees the quality of the product in conformity with the prescribed conditions.

In such cases, the obstacles which would hinder a designer or planner from creating cheap products are removed. In the production of such products, the limiting price must be protected and all savings from the use of a progressive technology must be realized by the enterprise which produced the new product.

The conversion of a limiting price into a wholesale price, upon the condition that the product conforms to the quality and assigned technical-economic parameters, is

becoming a most important condition for the introduction of anti-expenditure price formation principles and stimulating a reduction in production costs. For many simple types of products, particularly consumer goods, there is no need for establishing preliminary limiting prices. However, prior to commencing the production of these goods, the prices must necessarily be coordinated with the consumer of the products or with the trade organizations.

During the course of producing and selling products, assuming that the technical properties or quality of the products are not as they should be or there is no demand for them, the consumer (trade organization) is authorized to raise the question of lowering the price for them. Naturally, such a reduction must be carried out at the expense of the economic activity of the producers. This will serve to manifest the flexibility of price formation and its active economic role which, as is apparent, is associated mainly with the responsibility of a producer for the quality and technical level of the product being produced.

With such a system of price formation, all profit resulting from the production of economically effective products by means of all factors (as a reduction in expenditures and the effectiveness of product use among consumers) will be realized by the producer. This is a very important element of cost accounting and it is aimed at ensuring that under the new managerial conditions a stimulation of profit is achieved not only by lowering production costs but also by producing basically new and highly effective products.

Control and Sanctions

A very urgent and important problem associated with the introduction of contractual prices is that of exercising control over the dynamics of these prices and their level.

Contractual prices must be established strictly in conformity with the methodological instructions approved by organs of price formation. These methods necessarily proscribe all of the parameters for the formation of expenditures and they define the economic effectiveness and profitability associated with the establishment of contractual prices.

Failure to observe the approved norms must be viewed as a crude violation of state price discipline. In connection with the democratization of price formation, the question of state price discipline is becoming more urgent. Thus, in the Law Governing an Enterprise the sanctions to be applied against violators of price discipline are becoming more severe. In particular, it is stipulated that enterprises which violate the prices must not only contribute the entire amount of their additional

profit to the state budget, but in addition they must pay a fine in the same amount. In other words, provision is made for dual responsibility in the case of a violation of state price discipline.

Measures are being developed at the present time for strengthening the service of price formation organs, which will be concerned with controlling the observance of price discipline in the national economy.

Obviously, the process of introducing contractual prices will not be simple or smooth. Indeed, our economic executives have become accustomed to the fact that prices are approved by the organs of price formation and thus they bear minimal responsibility for this work.

The work being carried out at the present time by the USSR Goskomsen [State Price Committee] in transferring the function of establishing prices over to individual ministries has revealed that a unique psychological barrier must be overcome here. And the consumer and the supplier must equally take into account the economic interests of their partners in addition to their own interests. This factor is missing in existing economic practice concerned with the interrelationships of producer and consumer. These interrelationships cannot be developed by imposing conditions only on one side. For example, a consumer cannot demand the mastering of a new item of equipment if he has not taken into account the real and valid expenditures required for mastering its production. Similarly a consumer cannot impose upon a consumer a product that is unsuitable for his purpose.

The adoption of the Law Governing an Enterprise (association) raises anew many price formation questions. Democratization in the establishment of prices does not signify a rejection of state control over this sector. However, the process of controlling it will be considerably more complicated compared to the existing principles, when the prices are approved for the most part by the organs of price formation. Under the new conditions, the chief task of these organs must be not that of approving the prices but rather controlling the price formation process.

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Price Commission Official on Need for Wholesale Price Changes

18200023a Moscow *EKONOMICHESKAYA GAZETA*
in Russian No 48 Nov 87 p 14

[Article by N. Chekhlov, member of the USSR State Committee for Prices, chief of the general economics division: "Restructuring of Wholesale Prices and Self-Financing"]

[Text] The improvement of price setting is inextricably linked both to the level of development of productive forces and the scale and nature of the problems of socialist construction that are being solved, on the one hand, and to the system of management of the national economy, on the other.

This pattern is clearly manifested in the current sharp turning point in the development of the country's economy. Changing the enterprises over to principles of complete cost accounting, self-support, and self-financing requires the creation of the necessary economic prerequisites, including the appropriate price setting. How should it be arranged and what changes are earmarked for the existing system of wholesale prices?

In the Interests of the Consumer

Many ministries and departments, associations and enterprises see the restructuring of wholesale prices as a way of making reimbursement for losses and unprofitability of production and providing for income without improving production. This is clearly manifested now, during the course of the preparation for the development of new wholesale prices and rates, which are to be introduced on 1 January 1990. The USSR Ministry of Instrument Making, Automation Equipment and Control Systems, for example, insists that the profitability of its products be increased from 22 to 40 percent this year, to 45 percent in 1980, to 50 percent in 1989, and to 56 percent in 1990. Such an approach, in our view, is dictated by departmental interests and comes from ignoring the interests of the consumers and underestimating the new conditions for the sale of products consumed by the enterprises for money earned and, to a considerable degree, through wholesale trade.

Under conditions of self-financing and self-support, wholesale prices are intended to be the normative of the effectiveness of expenditures, a criterion for their social evaluation, and an instrument for coordinating various interests. They should orient the enterprise toward reducing production expenditures, accelerating scientific and technical progress, and utilizing natural resources efficiently.

The system of prices now in effect does not meet these requirements. There are quite a few reasons for this. Suffice it to say that previously prices were formed under conditions of practically unlimited and relatively inexpensive resources, the application of incomplete and to a considerable degree formal cost accounting, and the separation of the producers from the consumers. As a consequence they do not correspond to socially necessary expenditures and in many cases are based on individual production outlays. Prices are poorly coordinated with the effectiveness of the products that are produced. Another one of the shortcomings of the existing system is the economically unjustified dissemination of the practice of establishing several price levels for various consumers for one and the same product. For instance, there are now eight rates for electric energy ranging from 1 kopeck to 5 kopecks per kilowatt-hour. Incidentally, this practice also explains to a significant degree the variations in the levels of profitability of the branches and enterprises. Thus at the present time more

than 13 percent of the industrial enterprises are operating at a loss. The coal industry as a whole is unprofitable and logging is on the verge of being operated at a loss.

The restructuring of prices is called upon to bring these in line with modern requirements and eliminate existing distortions by changing the levels and ratios of prices and improving the methodology and organization of price setting. First of all it is necessary to coordinate prices with socially necessary expenditures and give them an anticost nature. Here it is important to provide for the priority of the interests of the consumers and to determine the price on the basis of the consumer value, effectiveness, and quality of the products. Production outlays are to be taken into account only for the basic items of a group of products. Even in the near future it is intended to improve the relationship of the prices for coal and gas, fuel oil, gasoline and diesel fuel, various kinds of design and construction materials, and items made of natural and artificial materials.

Democratization of Price Setting

The changeover to self-financing and the practical implementation of the USSR Law on the State Enterprise (Association) dictate the need for democratization of price setting and a decisive strengthening of the role of the consumer in establishing prices.

In this connection it is suggested that we sharply reduce the list of products whose prices are established centrally. There will be a widespread system of contractual prices established for a period of up to 2 years for practically all new industrial products. And in the future, taking into account the changeover to wholesale trade, it would be expedient to grant enterprises the right to sell products with deviations from the list prices without changing their relations with the budget.

Of course, it would be wrong to think of democratization of price setting merely as a simple redistribution of rights in the area of prices, for in essence it has profound economic consequences. In particular, it contributes to transforming prices into a most important factor in forming the resources of the enterprises and orients them toward the establishment of direct economic ties with the consumers and toward the need for comprehensive study of the demand, market conditions as well as the restructuring of production, taking consumer demands into account.

On the basis of principles of self-financing, it is intended to essentially change the approach to accounting for expenditures in prices. Here it is stipulated, of course, that one must not use actual individual expenditures as the basis for prices. Only socially necessary expenditures will be taken into account in prices. They will not include any kind of nonproductive expenditures or losses related to above-normative utilization of resources or expenditures made in order to give the products qualities not needed by the consumers.

At the same time as the prices are brought as close as possible to socially necessary expenditures there will be a change in the ratios of prices for products of the processing and extraction branches of industry (mainly as a result of increasing the prices of the latter).

The very approach to forming socially necessary expenditures will also change. Expenditures will be evaluated as socially necessary on the basis of comparing them with the effect in consumption, which will become the upper price limit.

It is also intended to reflect in prices to a maximum degree the expenditures of the society on producing resources and bringing them into national economic circulation. Taking this into account, it is planned to approximately double the rates of deductions for social security and deductions for geological prospecting work, to triple the payment for water, and to increase the stump payment for restoring forests by a factor of 1.5.

Price and Profit

Under the conditions of cost accounting activity of the enterprises, special attention should be given to reflecting profit in wholesale prices. This should be done, in our opinion, on the basis of the following principles: first, profit should be earned by the enterprises and depend on the effectiveness of their operation, and it should not be established in proportion to expenditures as has frequently been the case in the past. Moreover, the amount of profit must be determined taking into account funds for the development of production and its technical reequipment and reconstruction.

Second, on the scale of the entire national economy the sum of profit should correspond to the mass of consumer values so that the enterprises can realize (acquire goods for) their incomes. For, as experience shows, when payment funds are significantly greater than the commodity mass the effectiveness of economic incentives decreases and this leads to inefficient utilization of resources. In order to eliminate this situation, it is necessary first of all to determine the mass of profit on the basis of the actually created national income and its planned distribution and to check on the correspondence of the structure of the social product and the planned proportions.

Third, there must be a unified approach to the formation of profit in all branches of the national economy and for all enterprises on the basis of equally difficult requirements for effectiveness of the utilization of resources. Profit should be formed in the various branches on the basis of unified normatives for payments for resources, deposits into the budget for public needs, and also the formation of economic incentive funds. And profit in the prices for concrete items should be formed in proportion to the amount of their consumer value and be coordinated with the total profit of the branch (subbranch) determined on a normative basis.

And, finally, profit should be formed taking into account the differences in the conditions for the extraction and processing of natural resources and the existence of differential rents. With such an approach, the amount of profit in the prices will become not a normed but a resultant amount whose level will depend on the effectiveness and quality of products. It is assumed that increments to prices will not be established and the effectiveness of items will be taken into account directly in the prices. Thus they will be formed not simply per item, but in terms of the unit of basic consumer value (for example, the unit of useful substance in mineral fertilizers, the calorie of fuel, and so forth) and systems of additional payments for other parameters.

The approach presented here, toward whose practical implementation the efforts of the USSR State Committee for Prices are directed, of course, requires a considerable breakup of the existing mechanism for redistribution of profit among enterprises, ministries, and the budget. And this breakup, although it is just beginning, is already encountering certain obstacles. Certain ministries, departments, and workers of planning agencies assume, for example, that in the new prices profit should be established taking into account the means necessary for the development of the enterprises, the payment of bonuses, and also state expenditures, that is, irrespective of their real incomes. The realization of these proposals would lead to an even greater discrepancy between the monetary and commodity masses, to a devaluation of the ruble, and to a loss of any stimulating role prices may have.

And the last aspect. As we know, the normative for the formation of the economic incentive funds of the enterprises, which are formed basically from profit, is at the present time coordinated with the planned assignments of the current five-year plan and, as a result, is individual.

For example, according to the plan for 1987, the proportion of the fund for the development of production in percentages of amortization deductions is 22 percent for the USSR Ministry of Power and Electrification, 18 percent for the USSR Ministry of the Petroleum Industry, and 72 percent for the USSR Ministry of the Timber, Wood Processing, and Pulp and Paper Industry. But for the group of machine building ministries the proportion of this fund ranges from 88 percent for the USSR Ministry of the Automotive Industry and 142 percent for the USSR Ministry of Agricultural and Tractor Machine Building to 205 percent for the USSR Ministry of Chemical Machine Building and 395 percent for the USSR Ministry of Instrument Making, Automation Equipment, and Control Systems.

There is no less variation in the determination of the amounts of the material incentive funds. These funds comprise 8 percent of the wage fund in the USSR Ministry of Light Industry, 12.3 percent in the USSR Ministry of Agricultural and Tractor Machine Building,

20 percent in the USSR Ministry of Power and Electrification, and 24.5 percent in the USSR Ministry of Instrument Making, Automation Equipment, and Control Systems.

The ministries whose funds exceed the funds calculated on the basis of unified normatives for their formation insist on maintaining the existing situation in the future.

It seems to be impossible to agree with this. For such a decision would to a significant degree neutralize the effect of the restructuring of wholesale prices, would serve to preserve the equalizing approach to all enterprises, and would not create the proper economic incentives for improving their work.

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Finance Problems Lead to Call for "Flexible" Accounting System

18200023b Moscow *EKONOMICHESKAYA GAZETA*
in Russian No 48, Nov 87 p 13

[Article by A. Proskurin, deputy general director for economic problems of the Konveyer Production Association (Lvov): "A Precision Mechanism"]

[Text] I wish to continue the discussion started in the articles entitled "It is Time for Decisive Actions" and "There is No Time to Wait" (Nos 38 and 42 of EG). One cannot but agree with the authors of these articles—it is possible to utilize all the advantages of the new management system only if during the process of the changeover to self-financing the intraeconomic mechanism is activated and a stable economic base is created. This is confirmed also by the experience of our association, which in January of this year was one of the first in the branch to change over to the conditions of complete cost accounting.

One might say that the collective of the Konveyer Association began actively preparing for self-financing as early as 1985. That was when the new management methods were beginning to be worked out at AvtoVAZ and the Sumi NPO imeni M. V. Frunze, and we, attentively studying the mechanism in effect there and following their experience, made certain calculations and "tried on" the conditions of self-financing for our plant economy.

The preparation for the changeover to self-financing in the association began with an additional evaluation of the assigned five-year plan, above all those qualitative technical and economic indicators in it which contribute most to increasing profit. In particular, we revised the plan for technical progress in order to provide for higher rates of growth of labor productivity and reduction of production costs. As a result of honing down expenditure on the production of products, the profit was to double during the five-year plan. This was also the basis of the calculations concerning self-financing.

The envisioned profit volume makes it possible for the association to carry out completely the tasks that have been set for the assimilation of new technical equipment and the updating of fixed capital while promptly settling accounts with the budget and the ministry, and it will also be possible to speed up the construction of housing so as to solve the problem of providing each family with an individual apartment by 1995. Our plans are realistic. This is shown by the results of our work during the first 9 months of 1987. As compared to a similar period of last year, profit has increased by 20.7 percent, labor productivity has increased by 10 percent, and the average earnings of the workers, taking into account payments from the material incentive fund, have increased by 4.4 percent. All contractual commitments have been completely fulfilled.

One can say frankly that it would have been impossible to achieve such results without careful preparation for the conditions of self-financing of the intraplant system of management and the creation of an economic mechanism which would provide for unity of the planning indicators set for the association and for each plant subdivision.

Here we have had to think through and change a good deal. And mainly in the evaluation of the work of the plant subdivisions.

Up until recently, for example, the shops planned the volumes of product output in various measurement units, depending on the specific features of production. Thus in the precision steel casting shop the volume was determined in tons and in the machine shop, in rubles. Hence the different approaches to evaluating labor productivity, production cost, and so forth.

This system of planning indicators for the shops was not suitable for the new conditions—it did not provide the possibility of evaluating the contribution of each individual collective to the overall final results of the work of the association. We came to the conclusion that the basis for determining this contribution should be intraplant prices.

As our practice shows, a well-arranged intraplant mechanism for price setting helps to link the system of intraeconomic accounting more closely to the conditions for self-financing under which the association is operating. And here it is difficult for us to agree with the viewpoint of the economist of the Grodno spinning-thread association (EG, No 42) who considers it inexpedient to change intraplant prices. Apparently, much depends on the specific features of production. We have a firm conviction concerning this: intraplant prices can and should create conditions for struggling to increase the effectiveness of production and objectively evaluating the contribution of each collective to the overall results of the work.

This year the association has developed and introduced intraplant prices for products produced by the shops and production services with the idea that the sum of volumes of products produced by the subdivisions will be equal to the overall volume of output of the association. The calculation of intraplant prices is based on normatives of net output established for the association.

An example shows that item No 6Ye3-6543, for which the normative has been set in the amount of 3 rubles 20 kopecks, is manufactured by four shops in the association. From the calculation one can see the percentage of participation of each shop in the manufacture of the item. Shop No 1 accounts for almost 50 percent of the wages and shop No 2, a little more. The degree of shared participation of each shop is used as the basis for differentiating the normative for the given item: shop No 1 accounts for 1 ruble 59 kopecks and shop No 2—4 kopecks.

Thus the normative established for the association is broken down into normatives for the shops, taking into account the concrete contribution of the collective.

The utilization of intraplant prices makes it possible to establish for the main shops the same indicators that are established for the association as a whole.

In order to plan the wage fund for the shops, for example, one uses the same economic normative of increase compared to the base fund as is used for the association.

Previously, for instance, in the machine shop the number of personnel and the wage fund were calculated according to the labor-intensiveness of the products and in keeping with the organization chart that was in effect. If the shop "managed to achieve" an increase in labor-intensiveness or expansion of the organization chart, it automatically received an increase in the wage fund. Paradoxes arose: frequently the one that had worked best had a smaller wage fund than the one that was doing the worst job.

Now, on the basis of intraplant prices, the volume of product output has been set for the machine shop in the amount of 780,000 rubles with an increase of 10.7 percent over the same period last year. The same rate has been established for increasing labor productivity. On this basis, the shop itself determines the planned number of workers. As concerns labor-intensiveness and organization charts, these are also the shop's internal affair. We have granted our shops the right to determine the organization chart for time-rate workers independently within the limits of their labor plans. The division for organization of labor and wages has retained only the function of checking to make sure that the occupations correspond to the standard list, and the wages of the workers—to the standard wage rates.

Table. Example of Calculation of Intraplant Prices (rubles)

	Indicators	For Association	Including for Shops		
	1	2	12	19	
Normative net output (according to price list)	3.20	1.59	0.04	1.49	0.08
Wages for item No 6Ye3-6533 in percentages	100	49.69	1.24	46.59	2.48

The wage fund for the machine shop is calculated according to the normative established for the enterprise for the increase as compared to the base fund (that is, the actual fund of the fourth quarter of the past year)—0.3 percent for each percentage of increase in normative net output. Thus the shop's base fund is increased by $10.7 \times 0.3 = 3.21$ percent. As a result, the sum of the wage fund will be 150,500 rubles (the increase over the base amount of 4,700 rubles). Now this fund has been balanced with

the fund of the association. As compared to the previously applied method of calculation, the existing method makes it possible to strengthen the wage fund by 1,200 rubles.

This system contributes to a more objective evaluation of the shop's contribution to the final results, expands the independence of the collectives, and increases their responsibility for the results of their production and economic activity.

Table. Increase in Association's Profit From Economizing on Material and Labor Expenditures in 1987 (thousands of rubles)

	Machine Shop	Association as a whole	Total	Including from technical progress	Total	Including from technical progress
Divisions that should create conditions for economizing on material and labor expenditures throughout association						
Total	87.4	87.4	520.2	430.9		

Table. Increase in Association's Profit From Economizing on Material and Labor Expenditures in 1987
(thousands of rubles)

	Machine Shop	Association as a whole	Total	Including from technical progress	Total	Including from technical progress
Including						
Division for mechanization and automation	30.1	30.1	60.1	60.1		
Division of head technologist	29.7	29.7	99.0	99.0		
Division of head designer	6.2	6.2	69.9	69.9		
And so forth						

When creating an intraplant economic mechanism under the conditions of self-financing, it is important to correctly evaluate the contribution of the plant subdivisions to the collective's achievement of the established amount of cost accounting income or profit. We still cannot say that we have completely thought through the mechanism of intraplant planning of this indicator. We have just begun to solve the problem. We now determine the contribution of the subdivisions and services through the savings on material and labor expenditures that directly affect the level of the enterprise's income. Here is how the assignment for savings is established for certain plant subdivisions.

The shops and departments are informed of the indicator with a quarterly and monthly breakdown. As one can see from the table, the planned savings on material and labor resources throughout the association as a whole is 520,200 rubles, including 430,900 through the introduction of measures from the plan for technical progress. These figures were obtained as the sum of planned assignments for the shops with the direct participation of the corresponding departments and services in their fulfillment. The aforementioned savings provide for the fulfillment by the association of the plan for reducing production costs and increasing labor productivity. This savings in the form of control figures was previously submitted to the developers of the annual plan for technical progress and it was the basis of the annual, quarterly, and monthly shop plans for production costs. Thus the planned assignment for the shops and associations as a whole to reduce production costs was reinforced by the development of concrete measures.

Each department must make its contribution to reducing production costs. It is planned for them to achieve fulfillment of specific items of the plan for technical progress in the given period and in the given shop. If the introduction of the measure has not provided for the planned economic effect, the department must introduce in the shop additional measures for achieving the given indicator.

The amount of the bonus calculated for specialists and employees of shops and departments for the fulfillment of the basic indicators for bonuses is adjusted by the

percentage of fulfillment of the established assignment for increasing production effectiveness. For example, a department has been given a bonus in the amount of 40 percent, but the fulfillment of the assignment for increasing production effectiveness was 95 percent. In this case the final amount of the bonus for the department will be $40 \times 0.95 = 38$ percent.

It should be noted that the fulfillment of the new indicator is evaluated not in terms of the intermediate result, but in terms of the final result. Here is an example. The head mechanic's division fulfilled its task in the introduction of a planned measure in the shop. But by the fault of another, cooperating division, the measure as a whole was not fulfilled. In this case the failure to fulfill the indicator will be calculated for the head mechanic's division as well, since no economic effect was achieved.

Hence it follows that the division must not only remember its own part of the work, but also take the necessary steps for the final introduction of the measure.

In order to motivate departments and services to operate with fewer personnel, we decided when awarding bonuses to engineering and technical personnel to use as an orientation the number of personnel and the wage fund from the organization chart. If from the organization chart there are vacant positions, the amounts of the bonuses for the workers are increased correspondingly. If for some reason the subdivision has additional staff, the bonuses for the workers are reduced correspondingly.

Such a policy for calculating bonuses contributes to reducing the number of personnel, which, in turn, leads to savings on the wage fund necessary for applying the new wage rates for workers and salaries for specialists and employees. In order to encourage especially outstanding workers, an additional 10 percent of the calculated bonus is deposited into the fund for chiefs of shops and divisions. This sum can be accumulated and carried over to the next year.

When creating a new system of bonuses for specialists and employees we tried to achieve an increase in the creative initiative and activity of this category of workers and receive a great return from them. Practice has shown that we have chosen the correct path.

The cost accounting mechanism created in the plant subdivisions should be extended to the production brigades. We still have some problems here. Their solution is the most immediate task of the association's economic services. But we have already done much thinking and introduced many things.

Today more than half of the brigades have been changed over to cost accounting. What indicators are planned for them? The list of items (in machine sets), which is closely coordinated with the association's plan for product sales and the time periods that provide for their prompt delivery. We also plan the wage fund for the brigade. It is established on the basis of the labor-intensiveness of items (taking into account its planned reduction and the bonus system that is in effect). The wage funds of individual brigades and sections must be balanced with the shop fund. At the same time work is now being done to calculate normatives for the brigades, on whose basis their wage funds will be calculated in the future. Here we have in mind that these normatives will create conditions for more complete realization of the principle: you will get what you earn.

Norms for the expenditure of the main material resources are also established for the brigade. This indicator is a constituent part of the planned production cost of the shop which, as we know, is most directly related to the basic indicator of profit. Material expenditures comprise about 62 percent of our production costs. Therefore one can understand how important it is to economize on them. Of course, one cannot do without precise, reliable accounting here. The normative method of accounting for expenditures on production which is used in the association makes it possible to create an effective system of control and analysis of both the course of production and deviations from the norms.

Obviously, one cannot but mention the problems revealed by the experience of working under the new management conditions.

We think that with self-financing, the ten normatives established in our branch to regulate the economic activity of the association constrain initiative to a certain degree. There is no doubt that there should be a stable normative for deductions from profit into the state and local budgets and for the ministry to create the necessary reserves. Normatives are also needed to form economic incentive funds. But, in our opinion, the enterprise should be granted the right to a full range of maneuvering when utilizing these funds.

11772

Production Association Manager Supports Internal Plant Pricing

18200023c Moscow *Ekonomicheskaya Gazeta*
in Russian No 48, Nov 87 p 6

[Article by G. Alova, chief of the financial division of the Belinskelsmash Plant (Kamenka, Penza Oblast): "In Bondage to Debtors"]

[Text] Beginning in January 1988 our plant will change over to operation under conditions of complete cost accounting and self-financing.

Therefore this year is very busy. We are now fulfilling commitments for delivery of agricultural machinery by 100 percent. The products are being delivered to the clients on time. But the money is not coming into our account and it is considered that the plant collective has not fulfilled the sales plan for the first 9 months and the 3rd quarter. The enterprise has failed to receive 2,030,000 rubles for product sales and has lost 500,000 rubles in profit. The reason is the lack of money in the accounts of the clients.

How much longer will the supplier have to pay for the faults of the consumers?

The cumbersome, awkward system of accounts for manufactured and delivered products freezes monetary funds for a long time in the credit indebtedness of the consumers.

If there is no money in the accounts of the rayon agroproms, the supplier begins correspondence with the higher authorities. First telegrams are sent to the gosbanks of the recipient (since the majority of gosbanks have forgotten their direct obligations: when the consumer is in a difficult financial position, the supplier should be the first to be notified). Upon receipt of a response from them the complaint goes to their guarantors (the oblast agroproms) who, as a rule, do not take measures to accelerate payment. Then the demands and requests for acceleration of payment are sent to the republic agroproms. And at the top of them all is the USSR Gosagroprom. So much extra paperwork, so much valuable time, and so much strain on the nerves of the workers, and there is only one result: there was no money in the consumers' accounts and still there is none.

So it is not time for our financial experts and economists to gather together at the "round table" and solve the problem of the system of accounts—make it flexible, simple, and convenient for everyone? For under the new management conditions the existing system of accounts creates conditions of bondage for the supplier: having fulfilled the state plan with respect to all indicators and in keeping with the agreements that have been concluded, the collective is left without sources of financing, as a result of the fact that its clients are—bankrupt.

11772

REGIONAL DEVELOPMENT

Formation of Territorial, Sectoral Associations in Georgia Described

18200093 [Editorial Report] Moscow *PlanoVOYE Khozyaystvo* in Russian Number 2 for February 1988 carries on pages 102-105 a 3000-word article by

candidate of economic sciences V. Burduli entitled "The Experience of Interaction of Sectoral and Territorial Administration." Burduli highlights the successes of two territorial-intersectoral associations (TMOs) created in the Georgian SSR: one in the city of Poti and one in Tbilisi's Zavodskiy Rayon. He states that the appearance of the TMOs "strengthens the influence of local organs of management on using the territory's production potential." He adds that significant successes have been achieved in coordinating "questions of accelerating economic decisions, planning, managing scientific-technical progress" as well as improving the work done on compiling 5-year and annual plans. Burduli lists 5 types of partnership agreements which can be concluded between TMO members. These are: "Introducing the achievements of science into production; utilizing production wastes; assimilating new types of goods; redistributing and lowering the number of above-norm, unutilized and disused material values; and rendering technical aid in using insufficiently used or idle equipment of some enterprises in the interests of others." Other favorable aspects of production in TMOs, Burduli elaborates, are the possibilities of maneuvering material and production resources between participating enterprises, thus eliminating underused capacities in some places and satisfying the needs for workers or services in others. The author feels that "disseminating the leading experience of realizing the achievements of scientific-technical progress" acquired by the TMOs is important. He warns, however, that for the successful creation of a TMO account must be taken of regional specifics, including "the administrative hierarchy under which it will function" and there is a need to determine "at each stage the degree of realization of specific functions of management."

Uzbek Gosplan Official Critiques Work of Republic Ministry

18200109 [Editorial Report] Tashkent EKONOMIKA I ZHIZN in Russian Number 12 for December 1987 carries on pages 2-9 a 6000-word article by A. Matveyev, first deputy chairman of the Uzbek SSR Gosplan, entitled "Ministries and Departments Under the New Economic Conditions." In order for perestroika to succeed, according to Matveyev, the activity of the ministries and departments of the republic must also be restructured. "Presently," he says, "they see their basic role in planning the composition, nomenclature and volume of products produced, in more detail than Gosplan and Gossnab." However, he notes, the ministries do not devote enough attention to developing new types of equipment, encouraging scientific-technical progress or monitoring activity in the socioeconomic sphere.

Matveyev assails the bureaucratism and formalism common to the work of many ministries and departments, as well as their "commanding and administrative" style. "The ministry does not have the right to implement detailed planning of an enterprise's work, or to crudely interfere in its day-to-day activity," he writes.

The author points out, however, that the ministries should not go so far as to act as mediators between the state and the enterprises. A ministry is "a fully empowered representative of the state, a carrier of its economic and social policy for the development of a given sector." The ministry also has responsibilities toward that sector, including accelerating scientific-technical progress and socioeconomic development. Improving construction, especially of housing, retail and wholesale trade, supply, finance and credit and relaying state orders also fall within the purview of the ministry. "The transfer to an integrated system of economic management through improving and restructuring the activity of the ministries and departments is not a simple matter," Matveyev concludes. "The task is, on the basis of the practical development of various forms and methods, to finish more quickly the adjustment of the economic mechanism."

RESOURCE UTILIZATION, SUPPLY

Equipment Rental Facility Created in Minsk

18200108 Moscow LITERATURNAYA GAZETA in Russian No 6, 10 Feb 88 p 10

[Article by A. Kozlovich, LITERATURNAYA GAZETA correspondent in Belorussia: "I'll Exchange Scissors for a Machine Tool"]

[Text] "I'm calling about an exchange."

"Hello," a happy voice was heard on the phone, testifying to the fact that my call was very much awaited. "Do you accept our variant?"

"I have to distress you, but I have nothing to exchange. I am a correspondent from LITERATURNAYA GAZETA and I'll exchange my questions for your answers. Is it possible to find out why your organization decided to exchange a GAZ-66 automobile for a microbus?"

"It's possible," my unseen conversationalist answered, and in his voice I heard a note of disappointment. "Do you know what capital supply means? It's coercion! In 1986 they allocated a GAZ-66 automobile to us. We had to take it, although we didn't need it. For 6 months it stood there without doing anything, and we had to pay for amortization, based on our own income. It's wrong! So as not to lose something good, we decided to exchange it for a microbus. With that our employees will be able to go to agricultural work. I am sick of going begging for it to various organizations."

My collocutor pronounced an excellent word—sick of it! I heard this intonation more than once when I called "about an exchange." They are sick of wrangling with a centralized supply, which ignores the needs of the manager. One manager needs an autocrane, but the fund gives him an autoderrick. Another manager cannot get around without a tractor, but he has to take an electric

loader. If you don't take that, you're left with nothing. One manager needs a lathe. Gossnab allocates him channel cutters. What does a true manager do? To try to exchange the cutters for a lathe. Or the cutters for an auto derrick, the autoderrick for a motor-trolley and finally, for the tool he needs. This is the so-called multi-stepped, multi-suffering exchange.

The texts advertising exchanges, printed abundantly in the newspapers recently, are surprising. For example: "An organization will exchange a passenger automobile for a tower crane, suitable for building a 9-story apartment house." The non-equivalent nature of the exchange is startling. It is absurd, but not an exchange. Nonetheless, the manager's explanations are logical.

"This year we began to build two 9-story apartment houses. No matter how much we requested, Gossnab would not give us a tower crane. This means that our undertaking with the housing is left hanging. We decided to try our luck with an exchange."

"And is the passenger automobile, which you are exchanging for the crane, of no use to you?"

"It's needed. But you have to sacrifice."

"But the tower crane won't always be necessary for you. You build two apartment houses and then what about the crane?"

"You're right. We'll turn over the housing and the crane will become useless. But that's tomorrow. Today we lack a crane for our complete happiness."

But I didn't control myself and said: "Hire a tower crane and be happy."

I didn't control myself because to bring happiness to people is more pleasant than disappointment. And the deputy chief of "Belnauchkomplektsnab", one of the subdivisions of the Belorussian SSR Gossnab, Mikhail Nikolayevich Petrovich, was also happy to inform me about the new type of service for a manager. A center for hiring complex equipment. It was created recently in Minsk. Such centers are also being organized in oblast cities. You come, take a crane, automobile, tractor, excavator, mobile electric station, drilling derrick... Use it as much as you think expedient, return it, give it to someone else to use.

"The center for hiring complex equipment is an order of the times," said Mikhail Nikolayevich. "Capital supply does not take into account the many nuances, so to speak, of local significance. We do not see that it will be substituted for wholesale trade. Buy only what is necessary. It's advantageous for you and for the state. But it's not always beneficial to buy. It's better to rent. We have the task of breaking down the psychology of an executive, accustomed to having his own of everything, even if it's unprofitable. Under self-financing, the hiring centers

are a salvation for less powerful enterprises or organizations. And even large plants willingly take equipment from us for a time. Let's say, the Minsk Worsted Combine used our excavator for four months. That means that it doesn't need to excavator for the remaining 8 months. But someone else needs it, a third person, a fourth..."

"How do you determine who needs what? How many specific excavators, tractor or automobiles have to be at the hiring center so that they don't stand idle, but work at full cycle?"

"That is currently the most pertinent question—to determine the precise demand for equipment which can be concentrated at a hiring center. It's a whole science and we are taking it seriously. Scientists from the Minsk Institute of the National Economy will help us put the work of the hiring center on a scientific basis. They are distributing questionnaires, carrying out surveys and analyzing the economic activity of enterprises, taking into account long-range plans."

"Mikhail Nikolayevich, are there many demands for equipment?"

"Very many! For 1988 we received them for 533 units of equipment at a sum of 3.3 million rubles. We cannot guarantee everything at the same time, and a line is set up. Clearly, the hiring center should be more powerful, more fully equipped with various mechanisms and instruments."

"What is in special demand?"

"Construction and transport equipment. They are building a lot of housing now. Cooperatives are appearing, involved in construction of dachas and other housing. They are also clients of the hiring center. We serve individual citizens as well. You need an automobile for a few days to transport property or construction materials. Come to us, we'll help. An automobile and a driver at your disposal."

MODELING, ECONOMETRICS, COMPUTERIZATION

Bushev Discusses Automation To Speed Statistical Reports

18200048 Moscow VESTNIK STATISTIKI in Russian
No 10, Oct 87 pp 3-10

[Article by S. Bushev, chief of the Main Computer Center of the USSR State Committee for Statistics: "Statistical Information System Along the Path of Restructuring"]

[Text] All our labor collectives have actively joined in practical restructuring, which should result in significant positive shifts and fundamental transformations in all

the directions of production activity of both the State Computer Center and all the subdivisions of the system of the USSR State Committee for Statistics.

In what do we see the main point of restructuring in work in the area of statistics automation? The raised question dictates the need to single out four groups of problems, on whose solution special attention should be concentrated.

First. Problems concerning the automation of the collection and processing of statistical information.

The main task concerning the automation of the system of state statistics lies in ensuring a significant increase in the efficiency of state statistics.

In urgent statistical reporting, on the average, the processing time will have to be shortened by no less than one-half. At the same time, the flows and composition of statistical indicators included in the "urgent" category should be changed. Current reporting should perform its function as quickly as possible, giving economic information to directive bodies for the adoption of appropriate managerial decisions. In the very near future it is necessary to see to it that basic monthly results concerning industrial statistics are submitted no later than the first of every month following the month under review. The monthly results of work performed by industry should be submitted in full no later than the second day of the month. Data on the statistics of agriculture, scientific and technical progress, transport, and communication should be available at the same time (no later than the second). The time of submission of monthly results of work on the statistics of capital construction, material and technical supply, trade, finances, and so forth needs to be shortened significantly.

When the task set is fulfilled, the monthly results of work of the national economy can be submitted no later than the fourth. It is impossible to accomplish it without qualitatively restructuring the organization of the collection and processing of urgent statistical reporting.

Under the new conditions the report discipline of enterprises and organizations and, consequently, of statistical administrations begins to have a perceptible effect on all work. Up till now there have been many examples of unsatisfactory report discipline. Administrations of statistics in the city of Leningrad and Leningrad Oblast, Krasnoyarsk and Krasnodar krais, and Kaluga and Kostroma oblasts of the RSFSR State Committee for Statistics and a number of administrations of statistics of the Kazakh SSR State Committee for Statistics are systematically late with the urgent reporting of industrial and capital construction statistics (forms No. 1-p urgent and 2-ks urgent).

The lack of discipline on the part of a number of enterprises of the Ministry of Power and Electrification, the Ministry of Machine Tool and Tool Building Industry, the Ministry of the Chemical Industry, and the USSR Ministry of the Electrical Equipment Industry is noted. By eliminating these delays alone, it is possible to save from 4 to 5 hours.

Most problems of significantly shortening the time of submission of statistical results are connected with the improvement and development of the material and technical base of state statistics.

Shortening the time of passage of urgent statistical reporting creates technical conditions for significantly reducing the time of processing and mail reporting, as well as of one-time statistical and sociological surveys. The time of processing final monthly reports can be shortened by 15 days and of annual reports, by several months.

The new tasks in the development of the automated system for state statistics are connected with the solution of problems of increasing the efficiency of labor performed by economists—workers at the central apparatus of the USSR State Committee for Statistics and state committees for statistics of the Union republics and administrations of statistics of krais, oblasts, and autonomous republics. It is a matter of the need for a practical utilization of the methods and means of the automated system for state statistics as tools of improving scientific labor organization and information services for statistical economists by means of automated work stations and with the use of modern personal computers. They enable economists to solve simple problems on their own, using local data banks, to prepare reports, and to work with textual information, as well as to ensure output to automated data banks at an appropriate level.

Another major direction in the activity in the automated system for state statistics is connected with an extensive introduction of economic and mathematical methods and appropriate software for improving and intensifying the economic analysis. The role of economic models in the development of the technology of the statistical forecast and economic calculations performed by means of modern computers should be singled out especially here.

Problems concerning the integration of the automated system for state statistics with other sectorial automated control systems and automated management systems occupy an important place in improving the processes of collection and processing of statistical information. Their solution will make it possible to give up in large measure the output of statistical data on paper and to shift to an exchange of data on magnetic carriers and, as needed, by means of communication channels. Furthermore, it is planned to collect primary and consolidated statistical reports directly from the automated system for

state statistics and automated management systems of enterprises and organizations, which will be an important potential for improving the efficiency and quality of statistical information.

Special attention should now be paid to the development of the rayon level of state statistics. We will have to significantly raise the level of automation at the rayon level, equipping rayon departments of statistics with modern mini- and microcomputers and, in practice, connect rayon organizations with computer centers, including them in systems technology. The rayon level of the automated system for state statistics should ensure the acquisition, processing, and transmission of statistical information, which overallly characterizes the state and development of the economy of a rayon as a whole, as well as of the economy of enterprises and organizations, and the combination of sectorial and territorial directions in the development of a rayon. Along with the automation of the processing of statistical reporting forms in all branches of statistics functioning at the rayon level of the automated system for state statistics, it is necessary to automate the processing of intersectorial problems, that is, evaluation of the course of realizing the Food Program, fulfillment of the program for the production of consumer goods by specific rayon enterprises and organizations, and many others.

Second. It is necessary to strengthen the material and technical base of the system of the USSR State Committee for Statistics.

This concerns primarily the reequipment of the technical base oriented toward the automated processing of statistical information with modern computers and communication channels.

First of all, it is necessary to efficiently utilize the available equipment and that entering the system. This requires on the part of the managerial personnel daily painstaking organizational work on the development and testing of plans, prompt training and retraining of specialists, and qualitative technical services and repairs.

The situation is by no means the best. For example, in the RSFSR and Ukrainian SSR state committees for statistics not all rayon organizations have a clear idea of the types of machines planned for deliveries during the current five-year plan. This despite the fact that standard hardware components for the oblast level and departments at the rayon level of the automated system for state statistics have already been developed. It is only necessary to organize matters well.

New technical and technological solutions will play a major role in the development of the technical base. Means of communication are of decisive importance in increasing the efficiency of the collection and processing of statistical data.

Communication (telegraph and telephone) channels should become an integral part of technology. By 1990 all rayon organizations will have to be included in teletype communication and all oblast bodies of state statistics, in selected telephone channels. It is not only a matter of selecting channels, but of integrating them with computer hardware at all levels and of developing a single computer network, which will make it possible to realize totally different processing modes and a qualitatively new technology of collection, transmission, and processing of statistical information. The task of building (laying) physical trunk lines to intercity telephone stations in most oblast administrations of statistics is set as early as the current year.

A general use of communication channels will make it possible to develop a qualitatively new systems technology based on principles of a single input of data and a complete elimination of the duplication of information flows. Such a technology creates the conditions necessary for automating the labor of all categories of a system's workers, including statistical economists. A wide use of display hardware and modern personal computers significantly increases the efficiency of processing on the basis of the technology of statistical data bases and interaction with automated management systems of enterprises and organizations.

The development of automated data banks on the basis of statistical information and, especially, the transition to the development of distributed automated data banks make it possible to qualitatively improve information services for all subscribers of state statistics. A mass introduction of automated data banks is a complex and labor intensive process. Therefore, in all administrations of statistics having the appropriate hardware (YeS-1035 and higher) at their disposal it is necessary to begin practical work on developing automated data banks of statistics of industry, capital construction, and so forth and to activate the introduction of automated data banks in a register form of information storage (registers of enterprises, construction projects, kolkhozes, sovkhozes, cities, rayons, and so forth).

In 1987 the Main Computer Center of the USSR State Committee for Statistics will have to develop and introduce a qualitatively new technology of development of complexes for electronic information processing adapted to functioning under modernized conditions.

Unified data base organization and support, standards for exchanges (with automated data banks, automated management systems, and so forth), realization of storage functions (work with data bases), interactive operating mode, and means of automation of planning and teleprocessing are the basic elements of the new technology.

Realization of the new technology is possible not only in the direction of organization of computer networks, but also by integrating all computers within the administration of statistics, creating the prerequisites necessary for

increasing the reliability of computer functioning and the transparency of the terminal access to computer resources. It is a matter of developing in administrations of statistics a single terminal network, through which all administration workers would have an access to the center's resources. The system of terminals (displays or personal computers) is designed for maintaining the modern systems technology of data processing, which eliminates a significant share of live labor (data preparation, transfer of carriers, correction, and so forth).

The equipment of a rayon link with modern personal computers should be put at the head of the list of organizational work. Special attention should be paid to the introduction of already available standard plans on microcomputers of the Neva-501 and Robotron-1715 types and to the preparation for the acceptance of personal computers of the YeS-1840(41) type, with which the rayon link will be equipped for statistical information processing. Therefore, first of all, now it is necessary to orient the equipment allocated for the rayon link toward meeting the needs for statistical data processing, increasing the degree of inclusion in automated processing. The task of the next 3 years is set so as to fully ensure the reequipment of rayon statistics with modern microcomputers. Every rayon department of state statistics should have personal computers with a new information processing plan functioning at them. They are equipped with means of teletype communication (where they are not available, with means of telephone or radio communication). The microcomputer at the rayon level of the automated system for state statistics is to be included in the systems technology as an intellectual remote access point. The solution of technical problems will make it possible to work out economic, organizational, and personnel problems, linking them into a single territorially distributed complex.

Nor should we forget the promising hardware, which shows good prospects for serious changes in improving the entire technology of statistical data processing. The "blank-6" device designed to technically equip the 1989 all-Union population census gives a good beginning for this. In the very near future it is necessary to bring work to its logical conclusion, attaining a reliable and stable reading of the blank (the Main Computer Center of the USSR and BSSR state committees for statistics). All computer subdivisions should implement preparatory measures for accepting new equipment and mastering the modern technology of processing all-Union population census data. Special attention should be paid to personnel training and retraining.

The "blank-6" initiated a new direction, which is important in practice, in improving the technical base—development and introduction of devices for reading information directly from the paper carrier, bypassing the data preparation stage. Subsequently, the computer should be developed so as to attain a reading of digital material

from the entire sheet right away, to learn to "understand" alphanumeric information, to adapt to various formats and types, and to significantly improve technical and economic characteristics (dimensions, weight, cost, reliability, and so forth).

Furthermore, it is advisable to begin the development of a specialized carry device, by means of which it will be possible to perform at first one-time census operations and then also current recording and statistics directly at enterprises. To be sure, in the future the "electronic" blank will have a revolutionary effect not only on statistics, but also on the entire recording in the country.

We must also discuss computer software, without which computer hardware is dead. The development and improvement of the collection and processing of statistical data are based on the available technology of complexes for electronic information processing. It is incorrect to assume that this technology has become obsolete and should be abandoned. Conversely, it is necessary to intensify and expand it in the following directions.

Acceleration in programming and, especially, in making changes in existing complexes for electronic information processing is the main task. Its accomplishment is based on the use of applied program packages. Now the sectorial fund of algorithms and programs has at least three applied program packages ("report," "form," and "RUSZ"), which are already applied for the development of complexes for electronic information processing.

Unification of data base organization and support and data formats for ensuring an interaction between automated data banks, the automated system for state statistics, and other sectorial automated management systems and automated management systems. It should be based on a system of sectorial standards regulating systems of indicators and forms of presentation and exchange of data on technical carriers. A unified system of meta-information should become the final result.

The introduction of software for the development of automated data banks and registers of statistical observations makes it possible to develop modern electronic facilities for the storage of statistical information with an immediate access to necessary data through the terminal network.

The problem of ensuring the continuity and transfer of software when one type of computer is replaced with another is of great practical importance. The availability of a significant fund of complexes for electronic information processing makes the indicated problem very urgent. Therefore, at present developers of complexes for electronic information processing for the YeS computer should envisage a transition from the operational system of the type of the electronic optic system to the specialized computer without reprogramming. For all other

computer categories it was decided to use the SI universal programming language, which is unified for many computer types (SM-1600, YeS-1840, Robotron-1715, and so forth).

The development of software for the automated system for state statistics will require the further organizational strengthening of programming subdivisions developing means of programming and planning automation.

The third group of problems is connected with the transition to the new conditions of management and a wide introduction of economic methods of management.

First of all, the entire economic mechanism of production activity is to be oriented toward the accomplishment of the main task—statistical information processing. Therefore, the plan for statistical operations is the basic planning list of operations by economic organizations. Failure to keep to the schedules of fulfillment of the plan for statistical operations is considered a breach of contractual obligations concerning deliveries. Thereby, great responsibility of labor collectives for direct results of labor activity is established. The indicated responsibility is backed economically. In practice, all the sources of funds are earned by the collective. They include the wage fund, the material incentive fund, the fund for the development of production, science, and technology, and the fund for social and cultural measures and housing construction.

It is considered necessary to expand the use of economic standards when planning the activity of cost accounting organizations of the USSR State Committee for Statistics, which ensure stability in economic activity, as well as make it possible to specifically direct collectives toward an increase in production efficiency, because they protect them against various kinds of reductions, cuts, and other types of petty tutelage. Eight standards are set for the five-year plan: payment for fixed capital, deductions from the calculated profit into the state budget, standard correlations between the increase in average wages and labor productivity growth, deductions from the calculated profit into the reserve fund, increase in the wage fund of workers in basic activity per percent of the increase in the volume of information computer operations, formation of the fund for the development of production, science, and technology, increase in the material incentive fund, and increase in the fund for social and cultural measures and housing construction.

The established mechanisms of management will begin to operate at full force only when every labor cell clearly visualizes what specific contribution it will make to the total economy of an organization, that is, not only meaningfully, but also economically (will it give an increase in volumes, what share of the material incentive fund is earned by it, has labor productivity been increased, and so forth). Accordingly, this will require the introduction of internal cost accounting in statistical organizations.

Problems of stimulating and increasing the interest of labor collectives in a rise in production efficiency occupy the most important place in it. The new conditions of management offer great opportunities for this. Whereas previously only the bonus performed the stimulating role, under the new conditions the wage fund will also play such a role. First, because it is not let down "from above," but is formed according to stable standards depending on the volume of performed operations. The bigger the volume of performed work, the bigger the wage fund; the smaller the volume of work, the smaller the fund with the ensuing consequences. Second, allowances or additional payments for holding two jobs can be paid from the actually earned (or saved) wage fund. The developed procedure of setting them envisages an increase in a worker's real contribution to the common cause over the amount of a corresponding remuneration. At the same time, a bonus is added to all types of allowances and additional payments (which also did not exist previously).

Material incentive funds and their amounts depend not only on the fund forming indicator (2 percent of the planned sum of the material incentive fund during the base year per percent of the increase in labor productivity) and the additional indicator (0.5 percent of the same sum per one-tenth of the percent of expenditures per ruble of volumes), but also on the results of production and economic activity.

Nonfulfillment of the plan for the volume of work in value terms also entails a reduction of 3 percent in the material incentive fund per percent of nonfulfillment. Nonfulfillment of contractual obligations is "punished" with a reduction of 2 percent in the incentive fund per percent of unfulfilled obligations. Plan fulfillment both in value and list terms (the plan for statistical operations is the main thing) is stimulated by an increase of 15 percent in the material incentive fund. When developing and introducing the indicated means of stimulation, it is important to direct them toward the accomplishment of the main tasks facing our system—a significant improvement in the efficiency and quality of statistical information and a fuller consideration of the practical contribution of every subdivision and every worker. How to realize this? It seems that it will be correct to establish a procedure of stimulation, under which subdivisions, which do not participate at all in statistical data processing (programming departments, operating departments, and so forth), should not receive a bonus in a full amount, but only a part of it (for example, not 40 percent, but only 10 percent). Such a measure will intensify the drawing of all the system's resources into the accomplishment of main tasks.

Unfortunately, at times there are still cases of refusals on the part of a number of administrations of statistics to fill orders for state statistics. They prefer to work on outside orders. Of course, this should be done, but statistics as the main state order should have priority, utilizing all available resources for this.

Under the new conditions of management a great deal will have to be relearned. For example, the fund for the development of production, science, and technology first offers the possibility of performing scientific research and planning-technological work, not waiting for centralized sources, and of purchasing the part of equipment not affecting the basic systems technology. The equipment for basic technology (computers, minicomputers, microcomputers, and means of teleprocessing), for the purpose of pursuing a unified technical policy and developing a continuous systems technology (the entire system in the processing of urgent statistical information, where the count is in minutes, should operate as a single whole, as a single collective), must be delivered in a centralized manner. Therefore, the capital of the production development fund will be partially used in a specific manner—its bigger part is centralized and its smaller part remains in computer organizations. Naturally, such a formulation of the problem requires new approaches to and decisions on realizing the capital of the indicated fund. Obviously, the main thing is that the high science intensiveness of our production (computers, teleprocessing, data bases, programming, and so forth) receives a real economic basis, which must be mastered.

The transition to the new conditions of management began on 1 July of the current year. Restructuring is being carried out on the go, without production stoppage. Economic training has expanded in all organizations. The mastering of new methods of management concerns not only workers at economic services, but also all other collective members. It is necessary to inculcate economic thinking in specialists and operators. To teach them to count capital and resources and to use them economically and efficiently is the main goal of universal compulsory economic education. Therefore, before the end of 1987 it is necessary to do the utmost to maximally master the new methods of management and to approach the beginning of 1988 with a developed mechanism not only in theory, but also in practice. To be sure, this will create economic prerequisites for the attainment of qualitatively new goals in the production activity of the entire computer system.

Improving the management system, it is necessary to rapidly complete the process of merging statistical administrations and computer centers of state statistics at the oblast level. The new organizational subdivision should have without fail the status of a state socialist enterprise and the Law on the State Enterprise (Association) should be fully applied to it. The structure of the statistical administration of the oblast soviet (the statistical administration of the city soviet) in the new capacity will take into consideration the experience accumulated in the statistical administration in the city of

Moscow and in the statistical administration in Moscow Oblast, which have been operating under the new conditions from the end of 1986.

The idea of setting the payment for statistical information expressed by a number of specialists on the journal's pages is worth supporting. We should separate the payment for a state order (from the state budget), in accordance with which information is supplied to management bodies on the established list and dates, and the payment for individual orders for statistical data executed on the basis of cost accounting contracts with organizations and enterprises. Statistical bodies should take a payment not only for the time used on a computer, for data preparation, and for other technological operations, but also for statistical information properly received on the basis of the results of one-time surveys from data bases, existing complexes for electronic information processing, and other sources. Such measures will significantly enrich our economic mechanism, strengthen the economy, and raise the prestige of statistical information. This will create a basis for the transition from information-computer to information services.

The fourth group of problems concerns personnel matters and the system's social development. On the whole, the personnel policy problem will be solved in full accordance with the requirements of the January and June (1987) plenums of the CPSU Central Committee. The social problems accumulated in the system for years must be set in motion. First of all, it is necessary to fulfill the plan for the capital construction of production buildings, which we have not done to this day, thereby freezing sizable capital investments and worsening the working conditions of computer network workers. It is necessary to significantly activate the construction of housing and projects for cultural-social purposes. The economic base for this is being strengthened considerably. The standard of deductions into the fund for social and cultural purposes and housing construction is being doubled. It is also advisable to use the capital of this fund, first of all, for the construction of dwelling houses, kindergartens, nurseries, pioneer camps, rest bases, and other projects for nonproduction purposes, for which the allocation of no less than 50 percent of the capital for these purposes should be envisaged when the estimates of the fund's expenditure are worked out.

Time demands that we change from words to deeds.

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AGRO-ECONOMICS, POLICY, ORGANIZATION

Shtanov Interviewed on Economic Accountability in Gosagroprom

18240040a Moscow *EKONOMICHESKAYA GAZETA*
in Russian No 2, Jan 88 p 10

[Interview with V.I. Shtanov, chief of the Department for Improvements in the Economic Mechanism of USSR Gosagroprom; date and place not specified]

[Text] In January of this year, all of the agricultural, industrial, construction, trade and other enterprises and organizations of the agro-industrial committees of Russia, Belorussia, Lithuania, Latvia and Estonia, Ivano-Frankovsk, Crimean and Chernovtsy oblasts of the Ukraine, Surkhan Darya Oblast in Uzbekistan, East Kazakhstan, Kustanay and Chimkent oblasts in Kazakhstan, Osh Oblast in Kirghizia and also the enterprises and organizations of union subordination of USSR Gosagroprom [State Agro-industrial Committee] have converted over to complete cost accounting and self-financing.

What are the peculiarities and conditions associated with converting over to the new managerial methods? In this article, the chief of the Department for Improvements in the Economic Mechanism of USSR Gosagroprom V.I. Shtanov furnishes answers to these questions.

[Question] Viktor Ivanovich, how many farms, enterprises and organizations within the USSR Gosagroprom system are converting over this year to complete cost accounting and self-financing?

[Answer] First of all, I would like to mention to the readers that the country's Gosagroprom system includes more than 110,000 enterprises and organizations that are engaged in various types of work. Commencing in January of this year, 33 percent of them (roughly 58,000) will be operating under the new managerial conditions. They will produce more than one half of the output of agriculture and industry. This work is being carried out by more than 16 million workers.

The councils of ministers of union republics have been authorized, by agreement with USSR Gosagroprom, to convert over in 1988 to complete cost accounting and self-financing, as they are deemed ready to do so, the enterprises and organizations of agro-industrial committees of other republics, krais and oblasts and also RAPO's [rayon agro-industrial associations], with no change taking place in the interrelationships with the union budget. Such an approach is making it possible for the local organs to carry out preliminary work: to instruct the personnel in the new managerial methods, to examine thoroughly the status of the economy and particularly at weak and unprofitable enterprises and to undertake measures aimed at improving their financial condition.

[Question] The conversion over to complete cost accounting and self-financing assumes an expansion in the economic and production independence of kolkhozes, sovkhozes, enterprises and organizations. Under these conditions, how will the planning of their activities be carried out?

[Answer] Enterprises and organizations which have converted over to complete cost accounting and self-financing are independently developing and approving their plans for economic and social development based upon control figures, state orders, long-term economic norms and limits and also direct orders received from consumers and logistical supply organs for products (work, services) that have been made available to them.

The initial planning data contains only the more important indicators. It is made available in the established manner to USSR Gosagroprom, the gosagroproms of union and autonomous republics and kray and oblast committees, RAPO's and other agro-industrial formations, enterprises and organizations.

The structure of the control figures is determined by USSR Gosagroprom depending upon the operational characteristics of the enterprises and organizations, within the limits of the indicators called for in the USSR Law Governing a State Enterprise (association) and taking into account the Model Regulations for a Kolkhoz. The enterprises and organizations are supplied with state orders for the delivery of products (carrying out of work and services) and also for the placing in operation of production capabilities and projects in the social sphere using state centralized capital investments.

At this point I would like to single out one interesting feature. A state order for the delivery of agricultural products is made available as a rule to rayon agro-industrial associations, agricultural combines and other agro-industrial formations. And they organize the work of concluding contracts for deliveries of products by kolkhozes and sovkhozes, including products not found in the state orders and sold by them independently.

With further development in the integration of agricultural production and the processing branches of industry, a consistent reduction will take place in the state orders for intermediate types of raw materials. The state orders remaining will be mainly those for the final types of APK [Agro-industrial Complex] products — sugar, butter, cheese and others.

As changes take place in the population's demands and in the orders sent in by trade organizations for certain APK products, USSR Gosagroprom, the councils of ministers of union republics and the agro-industrial committees are authorized to introduce corrections into the state orders.

[Question] One important condition for the cost accounting mechanism for management is that of stable economic norms. How are they being made available?

[Answer] The following long-term economic norms are being made available to enterprises and organizations.

- payments for the production funds, labor, natural resources and withholdings from computed profit (income) for the state (including local) budget. Moreover, the system for establishing payment norms from profit (income) for the budget is retained throughout the 1988-1990 period for sovkhozes and other state agricultural and also inter-farm enterprises and in the case of kolkhozes — normative payments into the budget of income tax, while taking into account an economic evaluation of the land and the availability of fixed capital and labor resources.

- withholdings from computed profit (income) and also from amortization, intended for the complete restoration of fixed capital; for the centralized funds and reserves of the higher organization;

- the formation of funds for the development of production, science and engineering; social development, material incentives and the overall wage fund (for enterprises and organizations which employ a form of cost accounting based upon a normative distribution of profit);

- the formation of a fund for currency withholdings (for enterprises and organizations authorized to operate on the foreign market);

- ratio between growth in average wages and growth in labor productivity (computed according to cost accounting income or another indicator).

The norms for the formation of economic incentive funds are established by the council of a rayon agro-industrial association or by another higher organ, to which the enterprises and organizations are directly subordinate.

Capital investments and the placing in operation of production capabilities and fixed capital, using internal resources and bank credit, are defined and approved by the enterprises and organizations independently.

The USSR Gosagroprom system includes many agricultural service enterprises. The principle which existed earlier, which called for their operations to be planned at a higher level, aroused many complaints and at times resulted in various types of abuses. Today the plans for the production of goods, the carrying out of work and the rendering of services by service, construction, transport and other enterprises and organizations are formed by them independently and mainly on the basis of contracts (requests) concluded with enterprises and organizations in the zone of services.

[Question] Are any changes planned in the logistical support for farms and enterprises which are converting over to complete cost accounting and self-financing?

[Answer] In the interest of radically improving logistical supply for enterprises and organizations of the agro-industrial complex, the plans call for a conversion (by stages) to be carried out over to a wholesale trade in products of a production-technical nature, with the proportion of such trade amounting to not less than 25 percent of the overall sales volume in 1988, in 1990 — 70 and in 1992 — 80 percent. Meanwhile, enterprises in the Estonian SSR have converted over completely to wholesale trade.

Work will be carried out simultaneously in connection with the extensive introduction into operations of new forms for organizing logistical supply, creating rental points for construction, earth-moving and other types of equipment and a network of commission shops and expanding production-commercial services in connection with the preparation of industrial products for use at enterprises and organizations of the agro-industrial complex.

[Question] Given the present level of purchase prices for agricultural products, will the kolkhozes and sovkhozes be able to operate under the conditions of complete cost accounting and self-financing?

[Answer] In 1986 the profitability of kolkhozes and sovkhozes within the Gosagroprom system was slightly more than 19 percent (on average) and this is certainly not enough for self-financing. Moreover, 16,700 kolkhozes and sovkhozes had a profitability of less than 15 percent and 6,500 farms operated at a loss. Thus the councils of ministers of union and autonomous republics and the executive committees of kray and oblast soviets of worker's deputies have been tasked, in conformity with the existing system, with using the budgetary appropriations obtained by kolkhozes, sovkhozes and other state agricultural enterprises which converted over to complete cost accounting and self-financing for establishing differentiated mark-ups for the purchase prices for agricultural products (additional payments per unit of product sold to the state). Towards this end, the plans call for the use of funds allocated earlier for:

- the payment of mark-ups added on to purchase prices for agricultural products for low profitability and unprofitable farms (based upon the actual payments for 1986);

- the financing of capital investments, maintenance of kindergartens, covering the losses of the housing and municipal economy and other planned measures for sovkhozes and other state agricultural enterprises and organizations and also for the extraction and transporting of peat (based upon the actual amounts reported for 1986);

— financing the planned expenditures of low profitability and unprofitable kolkhozes (with the exception of appropriations to be used for the construction of intra-farm roads);

— compensation for insurance payments;

— reimbursement for the difference in prices for mineral fertilizers, tractors, motor vehicles, trailers for them and for agricultural machines (taking into account their delivery volumes in accordance with the five-year plan).

In addition, mark-up amounts are being made available for adding on to the purchase prices for heavy young cattle stock (based upon the actual payments for 1986).

The present system of additional payments for product quality (excluding the additional payments for heavy young cattle stock) and for raising the level of such sales to the state, compared to the previous five-year plan, is being retained for kolkhozes, sovkhozes and other agricultural enterprises.

The mark-ups to purchase prices for sugar beets, essential oil crops and tea sold by agricultural enterprises in excess of the average level achieved during the previous five-year plan are paid using state budgetary funds and to the exclusion of the production costs for the industrial output. The profit thus realized must be taken into account when determining the economic norms.

Taking into account the amounts obtained earlier by the kolkhozes and sovkhozes as a result of the measures enumerated above, the total overall profitability of the kolkhozes and sovkhozes will exceed 28 percent and this will enable them to carry out expanded reproduction.

[Question] Will enterprises which operate under the conditions of complete cost accounting and self-financing receive an budgetary appropriations?

[Answer] Yes. It is considered advisable to continue throughout the 1988-1990 period the allocation of budgetary appropriations both for new construction and for solving especially important tasks, in conformity with the list of enterprises and installations included in the state plan, and also for the carrying out of measures considered to be of state importance: land reclamation, construction of intra-farm roads, forest and land management, campaigning against agricultural plant pests, animal diseases and soil erosion and carrying out nature-conservation and other types of work. These measures will be financed within the resource limits called for in the computations for the five-year plan.

At the same time, USSR Gosagroprom and the union republic councils of ministers, with the participation of USSR Ministry of Finances and USSR Agroprombank, have been tasked with implementing a complex of measures which will promote improvements in the financial status of subordinate enterprises and organizations and a

strengthening of payment discipline. Towards this end, use should be made mainly of their own internal funds and the resources of the centralized funds of the agro-industrial committees. Special attention will be given to the development and carrying out of specific organizational and technical measures aimed at raising the operational effectiveness of planned-unprofitable and low profitability enterprises and organizations, such that their unprofitable status will be eliminated by the year 1990.

In those instances where the agricultural processing and other enterprises and organizations, despite the measures undertaken, are unable to correct their unprofitable condition and are not capable of operating under the conditions imposed by complete cost accounting and self-financing, decisions will be handed down calling for their reorganization or transfer to other enterprises or a cessation of their activities in the established manner.

[Question] Many of the country's kolkhozes and sovkhozes are located in a zone of unstable farming. Naturally, their profitability and also that of the processing enterprises will change sharply. And under the conditions imposed by complete cost accounting and self-financing, such changes will necessarily be reflected in their economies. What is your opinion in this regard?

[Answer] In the interest of ensuring more complete reimbursement for losses caused by natural calamities or unfavorable weather conditions and achieving stability in the financial status of kolkhozes, sovkhozes and other agricultural enterprises, the need for raising the level of insurance reimbursement, commencing in 1988, to 70 percent of the value of a shortfall in the harvest of agricultural crops and perennial plantings, with no change taking place in the insurance payment rates, is recognized.

The USSR Ministry of Finances and USSR Gosagroprom have been tasked, over a three month period, with defining the measures for further improving the organization of state insurance for kolkhozes, sovkhozes and other agricultural enterprises and defining more precisely the conditions for insurance compensation for losses.

In addition, centralized insurance funds are being created in the appropriate administrative organs for agro-industrial production, based upon withholdings of up to 10 percent of the profit of enterprises and organizations engaged in the processing of agricultural raw materials. These funds will be used for financing planned measures in the event of a reduction in profit caused by limited deliveries of raw materials because of weather conditions. And certainly the centralized funds and reserves that have been created will be used for this same purpose.

In connection with the conversion over to complete cost accounting and self-financing, a great amount of work remains to be carried out in connection with further improving the organization of labor and wages.

In order to raise the interest and responsibility of the administrative organs of enterprises and organizations of the agro-industrial complex, for their final production results, USSR Gosagroprom, jointly with the USSR State Committee for Labor and Social Problems and the VTsSPS [All-Union Central Trade Union Council], have been tasked with ensuring a conversion over (by stages) to wages for all participants in production operations that are based upon gross income, with use being made of other anti-expenditure forms for stimulating production. Special attention is being given to the extensive introduction and strengthening of intra-production cost accounting, brigade and family contracts and to the rental form for contractual relationships. The plans call for an increase in the proportion of payment in kind wages for agricultural workers, with the amount issued being coordinated directly with the final results.

I wish to mention one peculiarity which one should be aware of. In view of the fact that enterprises and organizations within the Gosagroprom system are being converted over to complete cost accounting and self-financing under the conditions imposed by an approved five-year plan, USSR Gosplan, USSR Gosagroprom, the union republic councils of ministers, the republic, kray and oblast agro-industrial committees and the RAPO's are tasked with ensuring the development of plans for economic and social development during the 1988-1990 period, based upon the indicators for the five-year plan and the economic norms established for these years.

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REGIONAL DEVELOPMENT

Conference-Seminar on Self-Financing Held in Stavropol

18240037a Moscow SELSKAYA ZHIZN in Russian
15 Dec 87 p 2

[Item: "Conference-Seminar"]

[Text] Stavropol, 14 Dec. (TASS). The conference-seminar that ended in Stavropol was devoted to problems of transferring all the enterprises and organizations of the RSFSR Gosagroprom to full cost accounting and self-financing. Chairmen of agroproms of autonomous republics and of agro-industrial committees of krays and oblasts in the Russian Federation, who participated in it, exchanged their work experience and visited a number of kolkhozes, sovkhozes, and associations.

Two years ago in accordance with the decision of the CPSU Central Committee and the USSR Council of Ministers the people of Stavropol, for the first time in the country, were entrusted with conducting a large-scale

experiment in the transfer of all the kray's kolkhozes and sovkhozes to self-support and self-financing. They had to solve the most urgent problems of field cropping and animal husbandry intensification on the basis of the mastering of economic management methods, improvement in administration, and creation of a production atmosphere under which everyone—from field crop growers and livestock breeders to managers and specialists—aimed at the final result.

The results of the experiment are convincing. Many previously lagging farms reached the level of advanced farms, the number of intensive-labor collectives operating on the basis of the cost-accounting contract increased from 161 to 1,366, and about 30,000 families joined in work based on contracts.

F. P. Senko, deputy head of the Department of Agriculture and the Food Industry of the CPSU Central Committee, spoke at the conference-seminar.

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AGROPROM STAVROPOLYA Published by Agro-Industrial Committee

18240037b Moscow SELSKAYA ZHIZN in Russian
25 Dec 87 p 2

[Item by S. Timofeyev, SELSKAYA ZHIZN correspondent: "Bulletin AGROPROM STAVROPOLYA"]

[Text] Stavropol, 24 Dec. The first issue of the information bulletin of the kray agro-industrial committee AGROPROM STAVROPOLYA was published. As reported in the notice to readers, the task of the new publication includes the propaganda and introduction of modern achievements in scientific and technical progress, advanced practice, economic methods of management, and progressive forms of labor organization.

In the first issue a specific page is devoted to the realization of the kray's overall "Moloko" [milk] program. The practical experience of M. Aliyev's consolidated contract sheep breeding brigade from the Urozhaynenskiy Sovkhoz is illuminated in detail. In his article N. Tyutyunnikov, chief of the krayagroprom's legal department, writes about a strict observance of contractual discipline. A survey of the work of the APK processing industry and other materials are presented in this issue.

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First Secretary Discusses Self-Financing in Stavropol

18240037c Krasnodar SELSKIYE ZORI in Russian
No 11, Nov 87 pp 6-13

[Article by I. Boldyrev, first secretary of the Stavropol Kraykom: "Toward Self-Support and Self-Financing"; first two paragraphs are ZELSKIYE ZORI introduction]

[Text] Seven decades separate us from October. The present anniversary of the revolution is inseparably linked with those unforgettable historical days. It is

linked by the energetical creative search, new view of the prospects, and revolutionary goals set for party members and the entire Soviet nation by the 27th party congress and January and June (1987) plenums of the CPSU Central Committee.

The Stavropol Kray Party Organization, like the entire party, persistently fights for fundamental shifts in all national economic sectors. The agro-industrial complex occupies a special place in our work. Not only because 59 percent of the kray's fixed productive capital is concentrated, more than one-half of those working in national economic sectors are employed, and 49 percent of the entire output is produced in it. We well realize that to attain decisive shifts in the production of agricultural products and in the provision of the Soviet people with foodstuffs means to make a specific contribution to restructuring and to confirm the attainability of the goals set by the party in action.

I

By the beginning of the 11th Five-Year Plan the kray had a highly developed and well-equipped agricultural sector provided with competent personnel. The large-scale program for the development and zonal specialization of the kray's agriculture envisaged 15 years ago by the decree of the kraykom bureau was completed basically. Its realization made it possible to most efficiently, depending on natural and climatic conditions, place the production of key agricultural products and to concentrate it on large farms. Suffice it to say that during the 11th Five-Year Plan the proportion of specialized farms comprised the following: in the production of eggs, 100 percent; of poultry meat, 87 percent; of pork, 48 percent; of beef, 35 percent, of vegetables, fruits, and grapes, 65, 70, and 95 percent respectively.

Agricultural production management systems, including the system of "dry" farming for the most arid regions, were also introduced everywhere. The practice of developing goal-oriented overall programs became widespread. At the same time, much attention was paid to the social development of rural areas. A total of 800 million rubles were invested in these purposes during the 11th Five-Year Plan alone.

If we add to this that 478 highly mechanized kolkhozes and sovkhoses and 24 interfarm enterprises, to which 4.3 million hectares of arable land have been attached, are engaged in agricultural production in our kray, it will become clear what a high potential this sector has.

Agriculture developed at quite high rates during the 11th Five-Year Plan. However, hindering factors had an increasingly perceptible effect every day. The lack of equivalence of exchange between agriculture and industry was manifested ever more markedly and the opportunities of kolkhozes and sovkhoses for self-development became limited to an ever greater extent.

These contradictions were partly eliminated by the decisions of the May (1982) Plenum of the CPSU Central Committee. As is well known, as of 1 January 1983 the purchase prices of basic agricultural products were raised, increments in these prices were set for low-profitability and unprofitable farms, budget appropriations for the social development of lagging kolkhozes were allocated, and other measures directed toward the creation of real opportunities for the profitable work of every kolkhoz and sovkhos were adopted.

The plenum's decisions had a favorable effect on the development of the kray's agricultural production. However, the economic mechanism of management idled here and there and many were unable to utilize its advantages in order to efficiently carry out expanded reproduction.

Despite the rise in purchase prices, only every fifth farm carried out expanded reproduction through its own sources. Budget financing remained for the rest. All this financial assistance was given irrespective of the fulfillment of plans for the sale of agricultural products to the state.

The following occurred: The worse a farm operated, the bigger financial subsidy it received. All this continued to give rise to a free-ride mentality, to instill a psychology of irresponsibility for the fate of public production, and to lower the interest in increasing profit. Furthermore, the existing system of material incentives for specialists was not closely coordinated with final production results. The situation reached the point of paradox: At times an unprofitable farm received bigger bonuses than a highly profitable one.

The further increase in the production and sale of many agricultural products was also hampered by the imperfect price formation system. Existing purchase prices did not reimburse kolkhozes and sovkhoses for socially necessary expenditures in the production of vegetables, milk, beef, pork, mutton, and wool.

It turned out that the more products farms produced and sold, the bigger the losses they had. Of course, many covered their expenditures with the income from the sale of grain, sunflower seeds, sugar beets, and pedigree animals. However, the kolkhozes and sovkhoses that specialized in the output of unprofitable sectors were considered lagging for decades.

It became clear that the mechanism of management was not adjusted completely and economic conditions and methods of administration continued to lag behind the needs of the times.

The state of affairs was also aggravated by the fact that, as before, numerous planned indicators were assigned from above, excessive regulation in the utilization of internal funds was practised, and recording and reporting were cumbersome. Excessive tutelage fettered the

economic initiative and socialist enterprise of kolkhozes and sovkhozes and did not contribute to an increase in the economic efficiency of production. Under such conditions it was difficult to attain a spurt in agricultural output.

It was possible to attain acceleration and to overcome the hindrance mechanism only on the basis of the widest application of economic methods of management. We began to utilize this. For example, having set maximum purchase prices of wheat, mutton, and milk for the regions where these products were produced with smaller expenditures, we attained an increase in their production. The quality of mutton was also improved when the cost of emaciated animals was lowered and the price of animals of the highest and average degrees of fatness was raised. The experience of the Stavropolskoye Broiler Association also instilled optimism in us. Having changed over to self-support and self-financing in 1983, the association's collective greatly increased poultry production volumes, lowered the production costs of poultry, and with the earned money began to develop both the production and the social base at an accelerated rate.

Having carefully analyzed the accumulated experience and performed the necessary scientific research and economic calculations, the kray party committee and the kray executive committee decided to proceed from the proposal on conducting in the kray an economic experiment in an expansion of economic independence and transfer of agricultural enterprises to self-recovery of expenditures and self-financing of capital investments. We set for ourselves the goal of affording every kolkhoz, sovkhoz, and enterprise the opportunity to carry out expanded reproduction with its own funds. At the same time, it was proposed testing in practice the efficiency of measures to build up the economy of farms on the basis of a profound differentiation of purchase prices and their increments, as well as the new mechanism of planning, financing, wages, material incentives, organization of capital construction, and material and technical supply.

Our proposals found support in the CPSU Central Committee and the USSR Council of Ministers.

2

Today it is worth noting that the experiment is not conducted under "hothouse" conditions. The kray has not received a single kopeck of additional financial resources. A total of 336.9 million rubles were annually spent on setting experimental increments in purchase prices of agricultural products sold to the state. From what sources was this sum made up? Increments for low-profitability and unprofitable farms allocated, as to other krays and oblasts, in accordance with the decisions of the May (1982) Plenum of the CPSU Central Committee totaled 145.7 million rubles (for example, in Rostov Oblast the amount of these increments totaled 260 million rubles and in Saratov Oblast, 329 million

rubles), budget appropriations amounted to 176.2 million rubles, and the redistributed profit along the line of the former RSFSR Ministry of Agriculture totaled 15 million rubles. If we take into consideration that, on the average, the kray's sovkhozes previously received 37 million rubles from it, it is evident that with the transition to self-support the kray even lost 22 million rubles of financial resources, which it previously received annually.

Thus, the amount of received funds now directly depends on the quantity and quality of agricultural products sold to the state.

Experimental increments were set so that under production conditions the farm would have real opportunity to raise the profitability level to 27 percent. On the one hand, this is obviously insufficient. As is well known, to carry out expanded reproduction, 30 to 35 percent are needed. On the other hand, this was a seemingly starting step and opened up the possibility for kolkhozes and sovkhozes, through an improvement in the economic activity, to raise profitability to a normal level and to ensure efficient self-development.

The distribution of increments throughout farms proceeded on a standard basis with due regard for the economic evaluation of land, socially necessary production costs, specialization, the state of settlements of accounts with the State Bank, and other factors. Out of the 398 kolkhozes and sovkhozes transferred to the economic experiment increments were set for 320. However, the conditions of management of the rest make it possible to carry out expanded reproduction without additional financial assistance.

The entire amount of allocated funds was assigned for livestock products. Life confirmed the correctness of such a decision. First, these products are most necessary for improving the supply of foodstuffs for the population. Second, milk and meat have a low profitability level. Therefore, it was simply necessary to create economic conditions, under which kolkhozes and sovkhozes could engage in their production as profitably as, for example, in grain growing. Finally, basic types of livestock products are sold uniformly and funds are received regularly at the farms' tills all the year round, including from increments, which reduces the need for short-term State Bank credits.

During the distribution of increments according to types of products, farm specialization and the development of interfarm cooperatives were also taken into consideration. With due regard for all this kolkhozes and sovkhozes were divided into seven groups.

The amount of increments in the groups was differentiated. Even 200-percent increments were set. According to calculations by specialists, only such an approach made it possible to equalize the economic conditions of

management. Calculations were justified and the financial doping stimulated an increase in output on the most lagging farms. Now 97 farms, or almost every fourth kolkhoz and sovkhoz, have 100-percent increments and higher. Subsequent work showed that all these calculations were made correctly.

The establishment of a procedure, when farms receive funds only for sold products, in turn, opened up the possibility to fundamentally change the approaches to planning their production and purchases. The need to earn money directs people toward raising these indicators more strongly than any plan and, therefore, the conditions of the experiment stipulate that kolkhoz and sovkhoz collectives themselves have the right to determine the volumes of production and purchases. Looking ahead, I would like to say that practice confirmed the correctness of such a step. The number of lagging farms decreased sharply in the kray. Whereas 58 percent of the kolkhozes and sovkhozes did not fulfill the programs of the 11th Five-Year Plan for the sale of grain to the state, in 1986, only 19; of livestock and poultry, 45 and 8, of milk, 31 and 12, and of wool, 45 and 8 percent of the farms respectively.

We well realized that self-support and self-financing principles were firmly established in practice only if it was possible to combine the interest of an individual worker with public interests. Life itself suggested the ways here—a general introduction of effective intracost accounting, improvement in labor organization, wages, and production management, and an especially extensive introduction of contract and collective forms of labor.

Party organizations, managers, and specialists throughout the kray did extensive organizational work in this direction. A total of 320 farms, or about 80 percent, were transferred to the shop structure of management, which made it possible to improve the operational management of production and to increase its efficiency. Optimal cost accounting structures of low-level collectives were developed. In sheep breeding they were shepherds' brigades and at complexes and large areas, technological links operating at a unified collective rate. The brigade-link labor organization became firmly established in dairy husbandry. Where livestock sections were small, brigades with wages based on unified collective rates were established, and where they were big, links for specialized shops or buildings. In livestock fattening collectives were formed according to raising and fattening periods with the setting of individual piece rates.

The brigade contract now encompasses more than 90 percent of the plant growing and animal husbandry collectives. A total of 95 percent of the grain crops, 94 percent of the fodder crops, more than 90 percent of the sunflower seeds, and the entire area of sugar beets have been assigned to contract collectives. Work is being done

on transferring to cost accounting auxiliary and subsidiary, as well as service, subdivisions, whose expenditures total up to one-third of the production costs.

The collective contract ensured a sharp rise in labor productivity. The load per worker employed in cattle fattening increased by 15 percent, in hog breeding, by 10 percent, and in sheep breeding, by 26 percent.

For the first time in the country the conditions of the experiment permitted us to apply the agricultural contract. On the Oktyabr Kolkhoz in Zelenchukskiy Rayon last year the production of mangel-wurzel was transferred to the agricultural contract. After that its yield rose to 746 quintals per hectare, which was twice as much as the average annual level of the preceding 3 years. Production costs per quintal of mangel-wurzel were lowered from 2.1 to 1.35 rubles. This form of labor organization also attracts kolkhoz members, because it becomes possible to receive a high payment in kind. Having taken a hectare of mangel-wurzel on the basis of an agricultural contract, the link of Baydu Magomedova Khubiyeva received 127 quintals of root crops for its labor.

The number of subdivisions now working under the conditions of the agricultural contract in the kray has increased from 161 to 1,366. This convincingly attests to the popularity of such a form of labor organization.

It should be stated that with the transition to self-support managers and specialists have begun to search for the most diverse forms of involving the nonworking part of the population in public production. The family contract is developing actively. It has become widespread in the cultivation of mangel-wurzel and onions, in sheep breeding, and in livestock fattening. Now we have already almost 30,000 family contract collectives.

For example, the family contract in hog fattening was introduced on the Lysogorskiy Sovkhoz in Georgiyevskiy Rayon. Practice is as follows: The farm concludes contracts with citizens living in the village of Lysogorskiy. It allocates from 10 to 50 young hogs weighing 12 to 15 kg for fattening—500 kg of mixed feed per head. Fattening is carried out up to 110 kg and more during 6 months. A total of 70 kopecks per kg of weight gain are paid—an average of up to 70 rubles per head.

A total of 468 tons of pork were produced on the basis of contracts on the sovkhoz in 1986. An additional profit of 227,000 rubles was obtained—51 rubles per quintal of live weight. During 7 months of the current year 304 tons of pork were raised by such a method. More than 400 families concluded contracts with the sovkhoz.

Such experience was also accumulated on other farms.

Or the following example. The family of pensioner Mikhail Timofeyevich Yeremenko from the Krasnaya Zvezda Kolkhoz in Blagodarnenskiy Rayon took four

calves for fattening and after 1 and 1/2 years returned this stock with an average weight of 680 kg to the kolkhoz. For its labor the Yeremenko family was paid 3,870 rubles, but the kolkhoz received 7,300 rubles from the sale of this stock. Every raised animal gave the farm a net income of 813 rubles. The average daily weight gain during the raising period totaled 1,200 grams. However, on the kolkhoz it was only 287 grams.

As we see, such a form of mutual relations is profitable both for the kolkhoz member and the collective as a whole. A total of 1,670 head of cattle are being raised on the basis of contracts at private homesteads in Blagodarnenskiy Rayon this year.

Thus, the family—the basic cell of society—becomes the primary labor collective. It has high discipline, the strongest psychological unity, high confidence in each other, and mutual assistance and support. There is no need to appoint a controller or a counter to look after such a collective. The family most efficiently utilizes public means of production, feed, fertilizers, and other material resources and what is of no small importance, involves pensioners, as well as children and adolescents, in socially useful labor within their powers.

Under self-support conditions it is especially important to find a bonus system, under which all categories of workers would be equally interested in an increase in profit.

This problem was solved efficiently on Pobeda and Pravda kolkhozes in Petrovskiy Rayon. Here the distribution of bonuses among production subdivisions is made from a single source—the material incentive fund. In turn, it is formed from net income according to the standard. Bonuses are distributed among production subdivisions in proportion to the contribution to the farm's common "boiler" and among individual workers, according to the coefficient of labor participation.

This experience fully corresponds to cost-accounting principles and directs the entire farm collective—from the manager to a rank-and-file worker—toward increasing production, improving the quality of output, lowering expenditures, and raising profitability. It is of no small importance that the new incentive system encompasses all the subdivisions of service facilities (garage, repair shop), which it was impossible to do under the former system.

In accordance with the assignment of the kray party committee specialists of the kray agro-industrial committee jointly with scientists generalized the experience of these farms, worked out recommendations for awarding bonuses to all categories of kolkhoz and sovkhov workers from a single source, and presented them to localities. Whereas last year 25 farms used material incentives from net income, this year 151 farms use

them. This eloquently points to the fact that collectives like the new form. It establishes the closest relationship between the measure of labor and the measure of reward.

Why is it now necessary to dwell in detail on these purely economic problems? Because without their competent solution and without increasing demands on economic and scientific personnel for an efficient and practical utilization of objective economic laws of socialism it would be difficult to realize the experiment's tasks and to attain a real expansion of the economic independence of kolkhozes and sovkhovs in the planning of production and financial activity, labor organization, material incentives for workers, and improvement in economic relations as a whole.

3

During many years, when the economy of kolkhozes and sovkhovs was formed mainly at the expense of budget appropriations, managers, specialists, and, moreover, rank-and-file workers ceased counting expenditures and thinking about how to live and develop the economy with their own funds. Therefore, it was necessary again and again to return to the economy of the experiment, to strive for a clear understanding of its essence by every worker of the agro-industrial complex, and to direct the entire organizational and mass-political activity of party committees toward the formation of economic thinking.

In fact, this work began a long time before the experiment and continues until now. The characteristics of management were widely discussed anew at kraykom, obkom, and raykom plenums, at party, trade-union, and Komsomol meetings, and at labor collectives of brigades, departments, sections, and farms.

Propagandists, lecturers, political informers, and agitators are engaged in extensive explanatory work. Scientists at the Stavropol Agricultural Institute and at the Niva Stavropolya Scientific Production Association and specialists at the kray agroprom have worked out and give courses of lectures on cost accounting, self-support, and self-financing everywhere. These problems have organically entered the program studied in the system of workers' economic education. To help students, aids in study methods have been developed.

The work of three raykoms on ensuring the transition to new conditions of management was heard, by way of control, at a meeting of the kraykom bureau. Raykom Days in primary party organizations of kolkhozes and sovkhovs and out-of-town bureau meetings, where the course of the experiment is analyzed and its intermediary results are summed up, have entered practice.

The state of affairs on kolkhozes and sovkhovs has been profoundly analyzed at a kray economic conference and two economic meetings. Recommendations on the introduction of the brigade contract and cost accounting in all

APK sectors have been worked out and a system of economic analyses at the level of a livestock section, shop, farm, rayon, and kray has been worked out.

The role of personnel is especially big in any new endeavor. Therefore, from the first days of the experiment we have attached great importance to the formation of new types of managers possessing economic thinking, enterprise, and a sense of being the master. Criteria of evaluating economic managers have been revised. First of all, the ability and desire to count money, to make economic decisions on the basis of financial calculations, and to attain profitability in production management have been taken into consideration. Realizing that such personnel will not appear by themselves, we have included a course in the new mechanism of management in the program of economic training for managers. Seminars with RAPO chiefs, kolkhoz and sovkhoz managers, and chief specialists have been devoted to the same subject. On base farms—we have more than 50 of them—individual elements of the new economic mechanism have been worked out to perfection and medium-link managers have been trained according to a 6-day program. We have also made changes—and again toward a profound study of the economy and intracost accounting—in programs for on-the-job training of chief specialists and secretaries of party organizations, those that are in the reserve for promotion. We have organized monthly on-the-job training of deputy RAPO chiefs in economics at three economically most successful rayon agro-industrial associations with the most experienced economists.

During the five-year plan nearly every manager or specialist in the reserve will undergo a system of improvement of skills and will master new economic methods of production organization and management.

I would like to stress that economic universal compulsory education has affected not only managers, but all personnel categories without exception. The publication of booklets on the organization of cost accounting and the brigade contract in 19 collectives of various sectors of agricultural production, pamphlets on the experience in the organization of economic work on the best kolkhozes and sovkhozes, and materials on problems of improving cost accounting and the collective contract on pages of kray newspapers has had a big effect on it.

Four groups consisting of secretaries and heads of kraykom departments, kray agro-industrial committee workers, scientists, and specialists established on the initiative of the kraykom provide efficient assistance in localities. They have carried out the certification of personnel directly at rayons and farms, analyze the essence of arising problems, and work out labor organization, wages, cost accounting assignments, and contractual obligations; in brief, everything that is connected to one extent or another with the transition to self-support.

Life itself has suggested two new forms of specific economic work with people: "Cost Accounting Days" and "Mutual Settlement Days." Whereas intraeconomic affairs are in the center of attention of "Cost Accounting Days," which have become a true school of economics for workers, kolkhoz members, and specialists, unified "Mutual Settlement Days" envisage the exposure of financial mutual relations between APK partners and other subcontractors. They are held at USSR State Bank departments with the invitation of chief bookkeepers of enterprises and RAPO. Claims against debts and the reasons for their occurrence are examined here and measures to improve solvency, including mutual settlements of accounts, are taken promptly. Such practice makes it possible to improve the solvency of kolkhozes and sovkhozes, to prevent the freezing of funds in accounts, and thereby to revive the economy.

It is impossible to manage primarily by economic methods without expanding the democratization of management of the agro-industrial complex. Therefore, on the recommendation of the kraykom bureau the kray agro-industrial committee elected by secret ballot chairmen of RAPO soviets from the best kolkhoz and sovkhoz managers. Now the RAPO council has the legislative power in the rayon association, whereas purely executive and working functions have remained at the RAPO apparatus. As a result, matters at the RAPO have revived considerably and association councils direct the apparatus toward the fulfillment of economically advisable decisions.

The chief thing that can be said about the results of all this organizational work of the kray party organization is that we have succeeded in profoundly explaining the essence of the experiment, in interesting everyone in it, in creating the most favorable conditions for initiative, and in coordinating the level and quality of life of the rural worker with the final results of his labor. As soon as people have felt this direct connection, initiative and the sense of being the master have been awakened in them, which is the chief and most important thing.

4

The introduction of self-financing and self-support principles has contributed to a rise in labor and technological discipline, good organization, and intensification of the sense of being the master in the expenditure of funds. Most managers and specialists have begun to more strictly count, systematically sum up work, and follow the financial status.

Changes can be seen everywhere. There is a reduction in expenditures on construction (through the application of local materials) and on the maintenance of equipment (through its better use). Both last year and this year only 3,000 motor vehicles, instead of 7,000 to 10,000 during previous years, have been brought from outside the kray's boundaries for harvesting and, at the same time, millions of rubles have been saved.

Realizing that they now must pay for everything from their own pockets, managers have greatly restrained their appetites for agricultural machines and mechanisms. Last year they gave up ordered equipment worth 8.3 million rubles and this year they have lowered their orders for equipment by 4 million rubles and for spare parts for it, by 2.4 million rubles. Fewer cases of squandering of fuel, feed, and spare parts are observed and there is more order in the utilization and storage of equipment, in livestock and poultry keeping, and in the maintenance of barns. After all, mismanagement and cost accounting are incompatible, just as cost accounting is incompatible with bureaucratic administration and petty tutelage. The experiment has forced party committees to significantly revise the style and methods of work on the management of the agro-industrial complex. Those economically responsible for management decisions—RAPO and farm managers—now make them. The kraykom and raykoms now carry out political management, control, and check on execution to a greater degree. Party apparatus workers had to entirely give up the method of coercion and to master the skill of convincing the masses.

The efficiency of new methods in management is measured primarily by how the weakest links perceive it. Thus, self-support principles have produced the highest results on lagging farms.

The Ternovskiy Sovkhoz in Trunovskiy Rayon was unprofitable during the last 10 years. Changing over to economic methods of work, it has been able to establish efficient cost-accounting collectives and to introduce order in all production sections. Cost accounting has been introduced in each of the 51 subdivisions, the collective contract, in 48 of them, and the agricultural contract, in vegetable growing. Separate shepherd brigades have been formed from family collectives. Individual cost accounting with the utilization of intraeconomic coupons is applied in the motor garage. The shop structure of production management has been introduced. Material incentives for all categories of workers are paid from a single source—profit.

This is what can be done in 1 year! As compared to the 1985 level, gross agricultural output increased by 56.2 percent and the consumption of feed per quintal of milk and weight gain in hogs and cattle decreased 1.5-fold. Production costs per quintal of milk declined by 10 rubles, of wool, by 197 rubles, and of weight gain in hogs and cattle, 2.4- and 1.4-fold. Labor productivity per worker increased 1.6-fold, totaling 13,500 rubles, while the average labor productivity in the kray was 10,000 rubles. Throughout the farm production profitability reached 58 percent and the profit totaled 4.7 million rubles.

Sovkhoz workers received additional wages. They saw that it was possible to live and work in another way and became firmly convinced of their abilities to do big things. Purchase plans are also being fulfilled this year,

expenditures on production during the first 6 months have been reduced by 372,000 rubles, debts have decreased by 700,000 rubles, and 1 million rubles have been added to the farm's current account.

Under the new conditions of management the following kolkhozes and sovkhozes have also rapidly ceased to be lagging: The Kolkhoz imeni Balakhonov in Kochubeyevskiy Rayon, the Kolkhoz imeni Voroshilov in Trunovskiy Rayon, the Moskovskiy Sovkhoz in Izobilnenskii Rayon, the Terskiy Sovkhoz in Budennovskiy Rayon, the Aleksandriyskiy Sovkhoz in Georgiyevskiy Rayon, the Nadezhdinskiy Sovkhoz in Shlakovskiy Rayon, and the Oktyabrskiy Sovkhoz in Prikubanskiy Rayon. In fact, there are no unprofitable kolkhozes and sovkhozes among the farms participating in the experiment. Last year all of them completed the year without losses. But during the last five-year plan every fifth farm was unprofitable.

An impression can be created that the experiment is directed only toward increasing the efficiency of work of lagging collectives. After all, substantial increments have been given to them. However, our practice has shown that under the conditions of the transition to self-support and self-financing kolkhozes and sovkhozes, which previously were also strong economically, get a "second wind." For example, the Kolkhoz imeni Chapayev in Kochubeyevskiy Rayon, which, on the average, received 3.8 million rubles of net income annually during the past five-year plan, last year earned 5.8 million rubles, reaching a 70-percent profitability level. The volume of gross output increased by 13 percent and labor productivity, by 20 percent. Nor are the results worse this year. The expansion of independence, strengthening of cost-accounting principles on the basis of the standard method of planning, and establishment of a direct dependence of material incentives for all kolkhoz members, including specialists, on the amount of net income and the profitability level resulted in an acceleration.

Not having experimental increments, the following kolkhozes and sovkhozes ensure a higher, as compared with the 11th Five-Year Plan, production profitability: the Kazminskiy Kolkhoz in Kochubeyevskiy Rayon, the Orlovskiy Kolkhoz and the Kolkhoz imeni Kalinin in Kirovskiy Rayon, the Put k Kommunizmu Kolkhoz in Apanasenskoy Rayon, the Pobeda Kolkhoz, the Kolos Kolkhoz, the Kolkhoz imeni Sarayev, the Kolkhoz imeni Kirov in Petrovskiy Rayon, the Put k Kommunizmu Kolkhoz, and the Kolkhoz imeni Kalinin in Stepnovskiy Rayon, Kalinovskiy and Prikumskiy sovkhozes in Budennovskiy Rayon, the Roshchinskiy Sovkhoz in Kurskiy Rayon, the Sovkhoz imeni 60-Letiya SSSR in Ipatovskiy Rayon, and others.

As expected, the transition to new conditions of management stimulated agricultural output. On the whole, last year the kray's kolkhozes and sovkhozes sold 2.25 million tons of grain to the state—300,000 more than the plan. A total of 26 quintals of grain per hectare were

obtained, as compared to 20.1 quintals, on the average, during the years of the 11th Five-Year Plan. This year, when weather conditions were extremely unfavorable and one-half of all the winter grain crops had to be resown, 20.8 quintals per hectare were obtained. This made it possible to fulfill the 2-year plan for the sale of grain to the state as early as October, in the course of the preanniversary socialist competition. More than 4 million tons were stored in the country's bins.

Definite advances have been made in animal husbandry. All rayons confidently cope with purchase plans. In the middle of October livestock section workers reported on the fulfillment of plans for 2 years of the five-year plan for purchases of livestock products. No less than 62,000 tons of meat, 150,000 tons of milk, and 145 million eggs in excess of the 2-year assignment will be sold before the end of the year. Such an acceleration has been attained for the first time in recent years, which convincingly attests to the efficiency of the new methods of management.

The productivity of animals rose considerably. For example, milk yields per cow increased by 188 kg last year and by another 198, during 9 months of this year.

Once there was output, the farm economy also improved significantly. According to the results of the last five-year plan, throughout the kray the profitability of kolkhozes and sovkhozes, on the average, made up only 17 percent. On the farms that participated in the experiment last year it reached 33.8 percent. On the whole, expenditures per output were reduced by 27 million rubles as compared to the 1985 level. A total of 577 million rubles of profit were obtained—104 million more than the plan. Debts on short-term State Bank loans were lowered by 82 million rubles and 149 million rubles were added to farm accounts.

These positive tendencies were further developed during the current year. During the first 6 months, as compared with the corresponding period of last year, the volume of gross output of the agro-industrial complex increased by 5 percent, while expenditures were reduced by 4 percent. Production costs were lowered by 19 million rubles as compared to the plan. The financial status of farms continues to strengthen.

Thus, 22 months of work according to the new method have taught us a great deal. The value of the Stavropol experiment lies in the fact that it is born out of practical needs, has been right away tried at an agricultural sector of an entire region, and is being tested under natural, not hothouse, production, social, and climatic conditions traditionally formed for farms. This is precisely why our experience attracts much attention. This is precisely why a republic school for the study of the work of kolkhozes and sovkhozes on full cost accounting and self-financing was opened at the kray's base this fall. Several flows of managers and specialists from many krays and oblasts in Russia have already undergone training there.

5

Big, complex, and responsible tasks concerning the implementation of the radical reform in economic management were put forward by the June Plenum of the CPSU Central Committee.

First of all, the planning practice will have to be reviewed fundamentally. It must be admitted that, although according to the conditions of the experiment, kolkhozes and sovkhozes are given the right to independently determine the volumes of production and sale of products, as yet they do not use it much. We must also more fully apply the standard method of planning at the level of farms and, especially, cost-accounting contract collectives.

Cost accounting put on the agenda the problem concerning the advisability of the still numerous staff of the RAPO and, moreover, the kray agro-industrial committee, which are supported by deductions of enterprises. In the krayagroprom we have cut the staff by 180 people. However, this process cannot be considered completed. For example, the following question was heard at a recent plenum of the kraykom: Is the managerial staff of the oblagroprom and eight RAPO totaling 382 people not too big? Here one staff worker accounts for one-third of the gross output, for example, at neighboring Predgornyy Rayon under the same natural and climatic conditions. The proposal to examine the possibility for the establishment of a single management body—an agro-industrial combine of the Kuban type with the subordination of all the oblast farms to it—was heard at the plenum. Incidentally, the organization from the beginning of this year of two similar combines—Izobilnoye and Kavkaz—has shown the high efficiency of the new form of agro-industrial integration. Both these enterprises have made a perceptible spurt in production efficiency and the economy of their constituent farms and enterprises has been strengthened.

However, a proposal on improving the system of material and technical supply for the APK was heard there, at the kray plenum. Farms have a great deal of earned money, but cannot always buy the necessary machines, equipment, building materials, and herbicides with it. Today the kray agro-industrial committee conducts the defense of material resources at numerous departments, whereas through the Stavropolsnabsbyt Association it could directly reach the USSR State Committee for Material and Technical Supply with a defense of allocations according to standards for output. The development of nonallocated wholesale trade in material resources is also urgently put on the agenda.

The range of new forms of labor organization is also expanding. We have established contract collectives with a long-term attachment of land and other means of production to industrious people with initiative. This will make it possible to even more closely interest workers in highly efficient labor.

Today it is especially necessary to improve the working conditions of kolkhozes and sovkhozes, because the framework of the experiment will expand significantly as of 1 January 1988: The RSFSR Council of Ministers has accepted our proposal on the transfer of all enterprises of the kray's agro-industrial complex to self-support and self-financing.

Proceeding from the demands of the June Plenum of the CPSU Central Committee, not long ago the Stavropolskoe Broiler Association submitted a proposal to central bodies to restructure the planning practice in the following way: one indicator—the state order for meat products—should be determined for the association and all the other basic indicators of the plan for the use of products should be formed independently. Furthermore, it is proposed that poultry meat be delivered by the association's refrigerator pool in cool, not frozen, as now, form, which promises great benefits, as well as that purchase prices of the product be revoked and its sale at contractual prices be permitted.

In brief, the experiment is reaching a new level of development of economic methods of management and extension of the economic independence of labor collectives and their responsibility for the results of their activity. The kray party organization is restructuring its organizational and mass political work in this direction.

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MACHINERY, EQUIPMENT

Agro-Machine Building Must Keep Pace with Agroprom Development

18240030a Moscow *EKONOMIKA SELSKOGO KHOZYAYSTVA* in Russian No 18, Oct 87 pp 10-18

Article by V. Chernoivanov, deputy chairman of USSR Gosagroprom: "From Progressive Technologies To Modern Equipment")

[Text] In carrying out large-scale restructuring in all spheres of life, the party is singling out the chief trends and key sectors in which a maximum amount of effort must be concentrated. The most important of these is an acceleration in scientific-technical progress. This was noted once again during the June (1987) Plenum of the CPSU Central Committee. The introduction into production of scientific and engineering achievements, the maximum use of new progressive technologies, basic improvements in the technical level and quality of machines and equipment and the technical equipping of all branches of the economy are viewed by the party as important trends in its economic strategy and as most important levers for the intensification of the national economy and for raising its efficiency.

Technical progress appears as a decisive condition for further development of one large element of the economy — the country's agro-industrial complex. In solving the food problem, the party has adopted a firm policy directed towards the technical re-equipping of agricultural production and the food and meat and dairy industry and converting them over to an industrial basis. The program aimed at strengthening and modernizing the logistical base of the APK [agro-industrial complex] and accelerating technical progress is an inalienable component part of the modern agrarian policies of the CPSU. As a result of its implementation, a considerable increase has taken place in the capabilities of agricultural machine-building and in the deliveries to agriculture of machines and equipment. In addition, the machine-tractor pool has been renovated from a quality standpoint.

During the years of the 11th Five-Year Plan alone, the power engineering capabilities of agricultural production and the power-worker ratio for its workers have increased by 25 percent and the availability of electric power — by more than one third. At the present time, there are approximately 3 million tractors, more than 800,000 grain harvesting combines, 20 million electric motors and many other types of modern equipment at enterprises and organizations of USSR Gosagroprom [State Agro-industrial Committee].

In conformity with decisions handed down during the 27th CPSU Congress, during the 12th Five-Year Plan agriculture will be supplied with 1,900,000 tractors, 1,600,000 trucks, 1,170,000 tractor trailers and agricultural machines and equipment valued at not less than 43 billion rubles, or more by a factor of 1.5 than the figure for the preceding five-year period. Intensive technologies for the cultivation of agricultural crops will be introduced into operations on an extensive scale. All of this will serve as the technical basis for a considerable increase in labor productivity in agricultural production.

In the interest of the technical renovation of kolkhozes and sovkhozes, additional measures were adopted this year aimed at accelerating the development of mechanized operations in agriculture. The plans call for further growth in the production capabilities of agricultural machine-building and, at the same time, more complete equipping of the agro-industrial complex with modern and reliable items of equipment. In conformity with critical comments and recommendations, the plans call for a specific program aimed at implementing the tasks associated with developing and organizing the production of equipment for the food branches of the APK, for the construction of storage bases and for the processing of agricultural products.

Thus, in continuing the program of the 27th CPSU Congress, the party and government are carrying out planned and purposeful work concerned with further developing the mechanization and electrification of agriculture and the food, processing and other branches of

the agro-industrial complex of the APK. In the process, as noted by M.S. Gorbachev, "in essence, we have in mind here the technological restructuring of the agro-industrial complex and thorough specialization and cooperation in the sphere of agricultural machine-building, chemistry and biotechnology."

An important component part of all of the diverse types of work being carried out in connection with accelerating technical progress in food work is the development of a system of machines for the all-round mechanization of agricultural production and the food and processing branches. Over the past 30 years, machine systems have been the basis for technical progress in agriculture and for the program concerned with the technical re-equipping of the kolkhozes and sovkhozes. In conformity with the agricultural requirements and the industrial potential of the country's national economy on the whole, and taking into account scientific and engineering achievements, a list of machines and equipment and their complexes, which are being produced or which still remain to be developed, tested and placed in series production, is being established on a scientific basis. In actual practice, machine systems are more and more becoming the initial base for inter-departmental and state plans for the development, mastering and production of new equipment for agriculture and for the further development of all-round mechanization for field crop husbandry, animal husbandry and other branches.

In the interest of achieving further industrialization and automation for agricultural production, ensuring that it is supplied with intensive technologies and accelerating scientific-technical progress, a system of machines for the all-round mechanization of field crop husbandry, animal husbandry, land reclamation, forestry and field-protective forestation has been developed and approved for the 1986-1995 period. Many achievements in the sphere of mechanization of agricultural production and machine-building have been selected and summarized on a scientific basis in the new system of machines and this is making it possible to coordinate the work of various ministries and departments at all stages in the creation of new equipment. Thirty four zones and sub-zones having more or less identical conditions for agricultural production and the use of equipment have been singled out for the scientific validation of the quantity and technical level of the technological complexes and individual means of mechanization required throughout the country's territory. In turn, 4-7 "model" farms have been singled out in each zone and sub-zone.

Based upon the data obtained, the scientific-research institutes of USSR Gosagroprom developed zonal and all-union machine systems. For the purpose of optimizing these systems, use was made mainly of the technological method of validation. The chief task consists of employing a systematic approach when planning the creation of technological complexes of machines which will ensure the most efficient carrying out of an entire

cycle of agricultural operations. Two important problems have been solved with the aid of mathematical models. One of them — grouping of equipment into a single technological chain for the carrying out of a definite cycle of agricultural operations, in accordance with an assigned agricultural technology and taking into account the selection of appropriate basic power engineering means, the types and specific machine structures and their working organs. Another important task consists of searching for efficient design solutions and the parameters and combinations of machines required for obtaining the greatest technical-economic results.

The new system of machines includes approximately 4,000 types of equipment for field crop husbandry, animal husbandry, land reclamation, forestry and field protective forestation. This is more by a factor of three than the figure called for in a similar document developed for the first time 30 years ago. The system of machines for the 1986-1995 period differs from previous ones in terms of both the amount of technical equipment and the modern requirements for the mechanization of agricultural production. At the present time, a requirement exists not simply for new, more modern and highly productive machines which will make it possible to mechanize individual processes, but also machine complexes and progressive technologies for the production of agricultural products which will exclude the use of manual labor and ensure all-round mechanization, flow-line production, savings in the use of power resources, a reduction in expenditures per unit of output and observance of the requirements for protecting the environment. The machine system was developed in conformity with the requirements for developing the mechanization of agricultural production and the food and processing branches, as advanced in the USSR Food Program, the decisions handed down during the 27th CPSU Congress and the party and governmental decrees on accelerating technical progress in the agro-industrial complex. The chief goal of these requirements included minimal use of manual labor, the completion for the most part of all-round mechanization in farming and animal husbandry and ensuring the re-equipping of the food branches of industry on a new technical basis, in the interest of obtaining the highest results in farming, animal husbandry and the processing branches.

The complete implementation of the machine system for field crop husbandry and animal husbandry will make it possible to raise labor productivity in farming by a factor of 2-2.5, in animal husbandry — by a factor of roughly 1.5; the number of workers engaged in agriculture will be reduced by several million. The new machine system takes into account both the types of equipment which are already being produced by industry and the new means of mechanization which must be developed, created and made available to production, that is, provision is made for an entire complex of technological operations and processes for obtaining high indicators with small expenditures.

The machine system for field crop husbandry includes more than 2,000 types of mechanization equipment, of which number approximately one half are already being produced, 230 have been recommended for series production and 770 are in a stage of development. The plans call for the replacement of 220 types of machines and items of equipment that are already in series production. The prospects for the development of mechanization in this branch are characterized by a further increase in the production of and an increase in the technical level of tractors and agricultural machines for the complete equipping of technological operations, in the interest of obtaining maximum results with minimal expenditures of labor.

The production of the new and modernized MTZ-100/102, MTZ-142, and DT-175C "Bolgar" tractors, the highly productive K-701Mm TM-250, T-30 tractors and others will be mastered during the current five-year plan. The production of a set of implements for use with high-powered tractors will be increased threefold. The designs for the machines call for the use of automation and control equipment, hydraulic drives and other modern technical solutions. A great amount of attention has been given to improving the working conditions of machine operators, creating comfortable cabins, regulating the temperature in them and reducing the noise levels.

The plans call for further improvements in the machines used for harvesting grain crops and for the creation and series production of new equipment. For example, production operations will commence on the wide-cut self-propelled ZhVR-10-03 harvester, the self-propelled ZhRS-6 rice harvester and the "Don-1500" combine.

Special attention is being given to the development, creation and series production of machines for the intensive technologies used for the cultivation of agricultural crops. Their introduction into operations on an extensive scale is making it possible to raise the cropping power in a realistic and rapid manner, to raise labor productivity considerably and to lower the production costs noticeably. At the end of this current five-year plan, grain crops alone will be grown using the intensive technology on an area in excess of 50 million hectares and this will require an expansion in the production and creation of new and more productive machines for the intensive technologies.

The technical base for intensive technologies includes several basic machines, many of which have been mastered in production. The plans also call for the creation of more effective wide-cut spray boom fertilizer distributors, sprayers, machines for applying mineral fertilizers, herbicides, equipment for preparing chemical solutions and other machines. In the process, a long term task is appearing for the creation of basically new

machines which will ensure a uniform track width, a high road clearance, a width of cut that is equal to or a multiple of the cutting width of the sowing units and others.

The new machine system for field crop husbandry is resolving the problem concerned with the extensive introduction of energy conserving technologies and particularly in connection with soil conservation. Approximately 25 percent of the labor expenditures and 30 percent of the fuel are being used for this purpose.

The energy conserving technologies include an entire series of technical-organizational solutions: reduction in technological operations and in the possibilities for combining them, the development of stationary technological processes which lower power expenditures during the drying, storage and processing of grain and forage crops and also the creation of and improvements in power-intensive technical equipment which consumes less fuel and has less specific resistance. A considerable savings in power will be achieved through the extensive introduction of machines for non-mouldboard and minimal soil cultivation, multiple unit assemblies which can carry out several operations during one pass and unconnected wide-cut and other highly productive machines.

The mentioned means of mechanization in turn constitute a technical base for labor conserving technologies, the introduction of which is receiving a considerable amount of attention. Fewer workers are needed, a maximum increase in labor productivity is being achieved and the carrying out of all production processes, including auxiliary ones is being shifted over to machines — today this represents a decisive trend in the development of mechanization in the agro-industrial complex and particularly in field crop husbandry.

Modern soil cultivation calls for the creation and extensive use of multiple-furrow plows with interchangeable working organs and unconnected wide-cut machines for cultivation, harrowing and the leveling off and packing of soil. All of these implements are fully serviced by a single worker-tractor operator.

An increase must take place in the production of machines which combine a number of operations concerned with soil cultivation, mineral fertilizer applications or spraying with toxic chemicals. The pool of such units must include more than 50 different types of multiple-unit items of technical equipment. Future plans call for the development of this trend in mechanization both through improvements in the new units being produced and created and through an increase in the production of multiple-unit assemblies. Their introduction into operations will make it possible to lower labor and power expenditures and raise the fertility of the soil.

One large problem and one which requires an immediate solution is that which is associated with the constant packing down of the soil during the carrying out of

mechanized operations. An increase in soil fertility will be achieved through the creation of a family of tractor-technological items of equipment mounted on low pressure tires. The new machine system also calls for further improvements in the complex of technical equipment employed for protecting soil against wind and water erosion. The plans call for the creation of a new generation of anti-erosion equipment: sweep-slot makers, rotary stubble field cultivators, cultivator-sweep-fertilizers, wide-cut sowing machine-cultivators, stubble field sowing machines, row crop cultivators for work on slopes and many others.

Such an approach with regard to technical progress is typical for the technologies employed for the cultivation of potatoes, vegetables, fruit, cotton, flax and other crops and also for their shipments, storage and primary processing and the mechanization of all production processes. In the interest of raising labor productivity, raising cropping power, achieving savings in fuel and power resources and protecting soil against erosion, modern progressive technologies are being developed for cultivating crops using new and modern equipment. In the process, a priority is being assigned to machine assemblies which ensure all-round mechanization, continuous production operations and the automation of an entire series of production processes.

The creation and extensive introduction of equipment into production operations, as called for in the new machine system, and its complete implementation — in essence represents only a minimal program for the mechanization of agricultural production. On the whole, agriculture, in accordance with its level of intensification, energy availability and technical equipping, still does not conform fully to the technical requirements. At the present time, the power-worker ratio for one agricultural worker barely exceeds 33 horsepower and the availability of power engineering capabilities per 100 hectares of sowings is roughly approximately 380 horsepower. By the end of the current five-year plan, the plans call for these indicators to be raised to 43 and 440 horsepower respectively. Meanwhile, the optimum requirement for power engineering capabilities is 60 horsepower per worker and 630 horsepower per 100 hectares of sowings. The power-worker ratio for agricultural labor in our country is lower by a factor of 2.8 than that in England and 6.5 times less than in the U.S.A. A great amount of work remains to be carried out in order to achieve complete and true all-round mechanization of agricultural production.

The problem of mechanization of production processes in the branches of animal husbandry is especially acute. In dairy cattle husbandry, manual operations are at the 40-45 percent level, swine breeding — up to 60, sheep raising — 80 percent. Even in poultry raising, one half of the operations are carried out manually. Manual operations are being employed today on the farms for distributing approximately 20 million tons of mixed feed, cleaning feeding troughs and stalls and for removing 500

million tons of farmyard manure annually. Roughly 500,000 cattle tenders alone are engaged in the cleaning of facilities. The greatest amount of manual labor is associated with the preparation, transporting and distribution of feed, with farm harvesting operations and with tending the livestock.

Up until now, all-round mechanizations has not been organized at small farms. On the large farms there are 20,000 dairy farms each with less than 100 cows, or 19 percent of the overall number available and 15,000 swine farms (56 percent of the overall number available), for which practically speaking no all-round mechanization equipment is available.

The implementation of the new machine system for animal husbandry will make it possible to reduce the requirement for service personnel in this branch and lower direct labor expenditures by a factor of 1.2-2 and operational expenses per unit of product by 20-25 percent.

The savings realized will be achieved by increasing the nomenclature, expanding production and creating new and modernizing old machines and equipment. The machine system for mechanizing the animal husbandry branches includes almost 1,000 types of technical equipment, of which number 500 are used in production. During the 12th and 13th five-year plans, it will become necessary to create and master the series production of more than 300 new types of machines and equipment, of which number 90 will be used for the replacement of 90 obsolete items of equipment.

The machine system calls for flow line technologies for the production of milk, meat and eggs and the automation and computerization of production processes. A progressive flow-line departmental technology for milk production is being introduced into operations in dairy cattle husbandry, with the milking to be carried out in milking parlours equipped with highly productive "tandem," "yelochka" and "karusel" units and in swine husbandry — using a technology for the rhythmic production of meat. Complexes and mechanized farms for the fattening of 6,000, 12,000, 24,000 and 36,000 hogs annually will be developed on an extensive scale.

In poultry raising, the plans call for the extensive introduction into operations of flow-line automated technologies for the production of eggs and broiler meat, with the poultry being maintained in multiple-tier batteries of cages with automated flow lines for the distribution of feed, collection and handling of the manure, gathering up and processing of the eggs and loading and transporting of the broilers.

In the case of sheep raising, the plans call for the development of a mechanized technology for pasture and indoor maintenance of the brood stock, with use being made of enclosed pastures, artificial raising of 10-20 percent of the lambs and the fattening of young stock at specialized sites.

At the same time, the plans call for the development and mastering of machines and equipment for the all-round mechanization of small farms of various specializations. In the system of machines for animal husbandry, a very important role is also played by the technical equipment employed for supplying heat and for creating a microclimate on the farms and complexes and in the poultry raising facilities.

Improvements in the productivity of the animals and the quality of the products will be promoted by automatic sets of equipment for the preparation and distribution of feed mixtures and for improving their nutritional value and assimilability, computer systems for optimizing the rations, mechanisms for establishing individual feeding norms for the concentrated feeds and other mechanisms. Thus, one of the principal future trends in the mechanization of animal husbandry operations is the automation of many processes and entire production operations.

Another important trend is the complete replacement of obsolete equipment, modernization of the mechanisms being produced and the creation of the machines required for eliminating the substantial amount of manual labor still being carried out on the farms. During a given stage, special attention is being given to the development and mastering of equipment for small farms of various specializations. A high level of all-round mechanization must be achieved in all sub-branches of animal husbandry and not just on new farms, but also in existing livestock and poultry facilities and work must be carried out in connection with their modernization and technical re-equipping. All of this is aimed mainly at raising the productivity of animal husbandry with minimal expenditures.

A great amount of attention is being given in this machine system to the mechanization of feed production as the basis for raising the productivity of animal husbandry operations. A leading trend in technical progress in this important sub-branch is the complete replacement of low-productivity machines being used for some operations by complexes of highly productive multiple-purpose self-propelled and towed technical equipment and also stationary items of equipment adapted for continuous use in the harvesting of various forage crops during the procurement season.

The plans call for the creation of a new self-propelled feed harvesting combine with an engine rating of 250-300 horsepower. The production of a complex of machines for procuring hay in the form of large-scale bales weighing up to 750 kilograms is also being planned. The system of machines calls for a complex of technical equipment for the cultivation and harvesting of food roots using the intensive technology, which makes it possible to reduce labor expenditures by a factor of 4-5. Improvements are planned for other items of equipment that are presently in production: mowing machines,

rakes, windrow pick-up and stackers, pick-up balers, hay loaders, sweep rakes and other items of mechanized equipment used for the procurement of feed.

Work is nearing completion on the development of a new and more powerful "Polesye" combine, which will have a productivity of up to 200 tons of fodder per hectare. Extensive use will be made of special KPS-5G mowing machines, E-281 feed harvesting machines (GDR) and its future modifications and an entire series of pick-up balers, windrow pick-up semitrailers, windrow pick-up stack formers, loaders, units for forced ventilation, for the preparation of protein-vitamin green feed, granulation, briquetting, artificial drying and many other items of equipment. Overall, for feed production and animal husbandry, the plans for the current five-year plan and compared to the previous one call for the production of almost twice as many machines, with 11-12 percent of their nomenclature being renovated annually. This strategic trend in animal husbandry and feed production will make it possible to solve the tasks set forth in the USSR Food Program.

The overall trends and basic requirements for mechanization enumerated above also apply to the machine system for the food and processing branches. In essence, USSR Gosagroprom appears as the single customer in the area concerned with the development, production and deliveries of equipment both for agriculture and for the food and meat and dairy industry and other branches of the agro-industrial complex. These tasks are being solved jointly with dozens of specialized industrial ministries and the network of scientific-research, planning-design and planning-technological institutes.

Attaching priority importance to the problems associated with raising the technical level and quality and improving the production and deliveries of equipment for the food and processing branches, USSR Gosagroprom and Minlegpishchemash [Ministry of Machine Building for Light and Food Industry and Household Appliances] have jointly developed a number of measures for strengthening the logistical base for the storage and processing of agricultural products. Enroute from the fields and farms to the store counters, up to 15-20 percent of the food goods never reach the population. A machine system that has been developed for the all-round mechanization of the food and processing branches during the 1986-1995 period, which includes approximately 4,000 types of technical equipment, represents a specific step taken towards accelerating the development of the food and processing branches, strengthening and modernizing their technical base and creating new machines and equipment. Of this number, almost 2,500 units are already being produced by industry. The remaining equipment has been recommended for series production, it is undergoing further testing or it requires additional improvements.

During the 12th and 13th five-year plans, in conformity with this machine system, enterprises of industrial ministries and plans subordinate to USSR Gosagroprom

must increase considerably their work volumes concerned with the production of machines and mechanisms for the food and processing branches and the storage of vegetables, fruit and potatoes. On this basis, a considerable expansion will take place in the capabilities for processing agricultural raw materials and producing products which are ready for use. Improvements will also be realized in packaging and wrapping production operations. This large-scale work will be carried out on a modern basis, while taking into account scientific and engineering achievements, the best foreign experience and future trends in the development of food machine building.

The chief trend in the development of technical progress in these branches is the development and delivery not of individual types of equipment but rather of complexes of machines and production lines, for use in obtaining food products and wrapping and packaging them. During the 12th Five-Year Plan, the nomenclature for sets of technological equipment will be increased by a factor of 2.5.

A task of special importance is that of organizing the mass production of new generations of equipment that will be capable of furnishing repeated increases in labor productivity and opening up the path to automating all stages of the food process. A substantial increase will take place during the 12th Five-Year Plan in the production of automatic rotary and rotary-conveyer lines, which make it possible to raise labor productivity by a factor of 5-10, to lower the requirement for production equipment operating space by a factor of 2-3 and to reduce the number of transport operations by a factor of 15.

The plans also call for an expansion in the production and creation of a considerable number of multiple function machines that will raise labor productivity from a factor of 3 to 5. Thus the production of processing centers will be increased by a factor of 4.3, flexible automated systems — by threefold and flexible production modules — by a factor of 2.8.

The machine system for the all-round mechanization of the food and processing branches calls for the development and introduction into operations of all-round mechanized and production lines with automatic control and management of the technological processes; automatic manipulators and robots, unified systems for automatic control over machines and sets of equipment based upon the use of micro-processor equipment; equipment for progressive storage and processing methods for agricultural raw materials, which will ensure a waste-free technology; equipment for the production of products for extended storage and for enriching them with protein additives; highly productive complexes which take into account the modern achievements of electronics and automation, in the interest of raising the quality of packaged products in industry and trade.

It is possible to solve successfully the task of technical re-equipping, modernization and expansion of existing and the construction of new enterprises in the food and processing branches of the APK [agro-industrial complex] only upon the condition that considerable improvements are realized in the technical level, reliability and quality of the machines and equipment. The mentioned indicators still remain low for many machines both in agriculture and in the food and processing branches.

On the whole, the coefficient of readiness and dependability is lower than the technical conditions in one out of every three series produced machines. The actual pre-repair service life of a majority of the tractors and engines is 4,500-5,000 motor hours instead of the prescribed 6,000-8,000 hours. Almost every tractor and combine, each agricultural machine and many types of equipment on animal husbandry farms are marked by deviations from the technical conditions.

The USSR Minselkhozmasu [Ministry of Agricultural Machine Building] is confronted by specific tasks concerned with raising the technical level, quality and reliability of machines and equipment for the APK. Important work must be carried out in connection with the standardization of machines, units and assemblies and, on this basis, reducing the nomenclature of similar type items of technical equipment, while causing no harm to agricultural production or the processing enterprises.

In addition to the machine building ministries and other departments, USSR Gosagroprom is also participating in the work of solving these tasks. Its subordinate organizations compose scientifically sound orders for machines employed in the agro-industrial complex, they prepare agricultural zooveterinary requirements for them and they carry out state, preliminary and controlled testing of the equipment.

Greater use must be made of the available scientific-technical potential and the production base for developing all-round mechanization in agriculture and in the food and processing branches.

The agricultural science has been assigned the urgent task of creating a unified system of machines for the country's agro-industrial complex on the whole. It must include the technical equipment required for all branches of the APK, the rural economy and forestry, land reclamation and the food and processing industry. An inter-departmental committee has been created for the machine system for the agro-industrial complex. An NTTs [nauchno-tekhnicheskiy tsentr, scientific-technical center] (NTTs "Machine System") has also been organized for the unified machine system for the APK. The purpose for its creation — coordinating the work of the various ministries, departments, enterprises and organizations in developing the overall machine system, raising the level of its technical-economic validation and

providing unified scientific-methodological leadership in the development of and control over the course of its implementation. The functions of the NTSs "Machine System" have been assigned to VIM [All-Union Scientific Research Institute of Agricultural Mechanization]. The scientific-technical center, jointly with all of the interested ministries and departments and their structural subunits, scientific-research and design and planning-technological organizations have commenced the development of a new system of machines for the agro-industrial complex for the 1991-2000 period.

The practical implementation of the machine system will be dependent upon technical progress and the level of mechanization in the APK branches. The mastering of previous machine systems for agriculture was carried out in an unsatisfactory manner. For example, the plans for the 11th Five-Year Plan called for the mastering of 780 types of new equipment and yet the production of only 350 new machines, or less than half, was organized. The entire series of new machines was produced in such small batches that they exerted no practical effect on the level of mechanization in agriculture. There are hundreds of new types of mechanization equipment that have been developed, tested and recommended for production and yet such production has yet to be organized.

The new equipment called for by the previous machine system for animal husbandry has not been mastered. For an extended period of time, the requests of kolkhozes and sovkhozes for mobile feed distributors, milking units with a milk line, feeder-batchers for feed, crushers and reservoir-coolers have not been satisfied. Nor has there been an adequate supply of the equipment needed for preparing feed, cooling milk or processing farmyard manure. Many of the machines and items of equipment produced for animal husbandry and feed production have become obsolete and are of low productivity, metal-intensive and unreliable.

The chief task at the present time is that of organizing the practical implementation of a machine system for the all-round mechanization of agricultural production for the 1986-1995 period. In the process, importance is being attached to concentrating efforts on the priority trends. In particular, USSR Minselkhoz mash must develop the mass production of dozens of machines for intensive technologies — spray boom feed distributors,

heavy cultivators, shallow plow sowing machines, wide-cut harrow hoes, disc plows and other machines. In addition, the ground lost in carrying out the tasks concerned with developing and organizing the production of other important types of new equipment and the modernization of machines and equipment being produced for agriculture must be recovered.

In 1988, USSR Minselkhoz mash must complete preparations for and organization of the production of new self-propelled highly productive feed harvesting combines, sets of equipment for the cooling of milk with thermo-cooling units and heat recuperators and sets of equipment for the mechanization of small farms. On the whole, the task for the next several years consists of developing designs for an entire set of machines for the all-round mechanization of field crop husbandry, feed production and animal husbandry and at the beginning of the 13th Five-Year Plan — mastering the production of all of the equipment called for in the machine system.

When implementing the new machine system, the industrial ministries and departments and particularly USSR Minselkhoz mash must raise the technical level of the machines being produced at their enterprises and make use in all areas of the latest scientific and engineering achievements. One of the key trends in scientific-technical progress in the production of machines for agriculture is the extensive use of electronics, small scale computers and microprocessors for selecting the optimum operating regimes for equipment and for controlling machines and technological processes, including in animal husbandry. First of all, such a saturation of automatics, electronics and computer equipment is required by technically complicated machines.

An acceleration in scientific-technical progress in the country's APK must be achieved through a high technical level, improvements in the quality of the machines and equipment and through a conversion over to new and progressive technologies and modern equipment. Only such an approach in the sphere of production mechanization will create favorable conditions for highly productive operations out on the fields and farms and at enterprises of the food and processing branches.

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GOODS PRODUCTION, DISTRIBUTION

Roundtable Discussion on Textile Industry Output
18270029a Moscow: TEKSTILNAYA
PROMYSHLENNOST in Russian No 11, Nov 87
pp 17-20

[Roundtable discussion: "Ways to Restructure the Work of Industry to Produce Output That Has Increased Demand"; conclusion. For beginning, see No 10, 1987, p 2]

[Text] Roundtable participants were:

L. K. Andreyev, RSFSR deputy minister of textile industry; V. Ye. Tikhonov, RSFSR deputy minister of trade; T. I. Balandina, director, ODMO [All-Union House of Clothing Models]; S. P. Metelkina, deputy director, VTsAMlegprom; Yu. G. Medvedev, director, Moscow Textile Printing Factory; V. I. Shurupov, acting director, Trekhgornaya Manufaktura Cotton Fabrics Combine; V. V. Melnikov, chief engineer, Moscow Fine-Cloth Factory imeni Petr Alekseyev; L. Straume, chief artist, OGRE PPTO imeni 50-letiya VLKSM; T. I. Shubenikova, chief of the artistic shop, Chaykovskiy Silk-Fabrics Combine imeni 50-letiya SSSR.

The roundtable was conducted by A. A. Kotova, member of the editorial board of TEKSTILNAYA PROMYSHLENNOST, deputy chairman of RSFSR Gosplan, candidate of economic sciences.

A. A. Kotova. Who is supposed to bear the responsibility for the correct development of a fashion and for studying demand? How should that work be organized?

Yu. G. Medvedev. The responsibility for the correct development of a fashion and for studying demand should be borne by special organizations. Until the present time, VTsAMlegprom (VIAlegprom [All-Union Institute for the Variety of Articles Produced by Light Industry]) has engaged in developing the demand [sic], and trade organizations have engaged in the study of demand.

T. I. Balandina. Responsibility for the correct development of a fashion and for studying demand must be given both to the industrial enterprises and to trade organizations. The success rate of that work can be guaranteed by a mobile information system and by its prompt use. That work should be begun with the organizing of wholesale fairs held every half-year, with corrections made on the basis of the results of the schedule for fabrics and articles for every half-year (rather than for 1.5 years, as is being done at the present time).

S. P. Metelkina. The responsibility for the correct development of a fashion should be borne by VTsAMlegprom, the House of Models, NII [scientific-research institutes],

and USSR Mintorg [Ministry of Trade] and its organizations, and the responsibility for studying the demand should be borne by VNIKS and the enterprises of industry.

V. V. Melnikov. At the enterprise itself, the artistic shop develops the fashionable output (designs it) and bears the responsibility for it. The sales department of the OUK, in close contact with the designers, should engage in demand.

L. Straume. At the enterprise, the responsibility for the correct development of a fashion and the study of demand should be borne by the chief artist, the chief color specialist, the chief designers, and the workers in the department for the study of demand.

V. I. Shurupov. The responsibility for the correct development of a fashion must be borne by the artists and the art experts who determine the long-term trends in the assortment of clothing and fashion, under VTsAMlegprom, as well as by the institute that studies the demands of various population groups (VNIKS). Those organizations should be creatively linked.

Representatives of the garment organization, base, and trade, that is, specialists in ready-made clothing, must know the fashion trend and must work to raise their esthetic level, thus having an effect upon its work, and they should carry out a broader study of the public's demand with a consideration of the long-term development of fashion.

A. A. Kotova. At the 1987 wholesale fair, commodities with a total value of several million rubles proved to be unsold. This is explained, in particular, by the fact that the trade system, as a rule, issues production orders to industry for volumes of production of output that exceed (by 20-30 percent) the volumes stipulated in the enterprise plans. Under these conditions the enterprises select that output that is easiest for them to produce. This situation is unprofitable both for the trade system (the necessary bulk of commodities is not received) and for the enterprise (which does not reach the planned volumes in retail sales and fails to fulfill the profit plan). Vladimir Yevgenyevich, what measures are being taken to refine the volumes of output ordered?

V. Ye. Tikhonov. Actually, at the trade fairs for 1988 and until the present time, the industrial enterprises of the RSFSR alone have failed to sell fabrics, clothing, and footwear with a total value of 2.5 billion rubles. Of them, commodities valued at 2.2 billion rubles were not offered by industry for sale under the computed index established by USSR Gosplan (for purposes of balancing the commodity resources and the public's monetary income) for the production plan in retail prices. The customers failed to buy commodities valued at a total of 0.3 billion rubles as a result of the lack of conformity between demand and the assortment of commodities

offered. Industry knowingly included in the plan unordered articles that were not needed by the customers. At the same time the level of production for many commodities in light industry, over a period of many years, has failed to provide for the public's needs. This can be said concerning practically all types of clothing and footwear for adults and children, and concerning many types of fabrics and other commodities.

Requisitions for the production of fabrics are submitted by the trade system in a group assortment with a consideration of the public's real needs and, naturally, they are greater than industry's capabilities at the given moment. The purpose of these requisitions is to orient industry toward the further development of production for the articles that the public needs, to produce them in the necessary volumes. However, one should differentiate between the concepts "requisitions" [*zayaski*] and "production orders" [*zakazy*].

According to the new statute, prior to the conducting of wholesale fairs the organizations engaged in trade must also submit to industry the production orders in extended assortment in the volumes of a preliminary assignment. Consequently, if the industrial enterprises develop the production plans in complete conformity with the trade system's production orders, the instances of nonsale of commodities at the wholesale fairs will be practically precluded. Moreover there will be a considerable increase in the responsibility borne by the trade system for the development of the production order.

However, at the present time, as of the moment of preparing the production order, the trade system does not have at its disposal the data concerning the volume and assortment of import purchases, export sales, financial limits and earmarked allocations (industrial consumption, state budget, etc.); it lacks well-substantiated efficient consumption quotas for many commodities, subdivided by assortment (including those for all types of fabrics, excluding sewn articles); there has been no elaboration of the nominal service life of the articles, including those that take into consideration the change in fashion (which service life should be elaborated by VNIKS); and it lacks other data that is necessary for the correct determination of need. These unresolved problems hinder the work of the organizations that engage in trade.

A. A. Kotova. What percentage of the overall volume of articles produced by an enterprise should be output that is especially fashionable?

T. A. Balandina. That percentage should be established by the trade organizations in conformity with the customers' demands, the needs, and the sales possibilities in the specific region.

S. P. Metelkina. We assume that for fabrics that indicator should not be more than 10-15 percent.

Yu. G. Medvedev. As a rule, modern fashion is oriented chiefly to young people. At the same time, by studying consumer demand, we have come to the conclusion that there is a need for fabrics with traditional prints which are not fashionable as of today, and also a need for fabrics with prints that appeal to various age groups and various occupations. Therefore, in order to give the correct answer to the question that was asked, it is necessary to have reliable sociological research and precise data from a study of consumer demand. In any instance, for textile enterprises the percentage of especially fashionable output should not exceed 40-50 percent.

L. Straume. We feel that especially fashionable knitwear, not considering articles with index D, should constitute 50-60 percent of the total production.

V. I. Shurupov. In the overall volume of articles, the especially fashionable output should constitute 70 percent.

A. A. Kotova. How should the advertising for the new commodities be organized?

T. I. Balandina. There is a need to organize a broad network of specialized stores and departments at department stores to sell especially fashionable articles, as well as a need for the corresponding design of the trade areas. It is also necessary to raise the esthetic level of the already existing forms of advertising (the design of advertising posters, display windows, mannequins, etc.). Simultaneously it is necessary to expand various types of advertising: the setting up of video systems to display new fashionable items, the showing of special movies at trade halls and other public places (clubs, movie theaters, parks, etc.); the broad publication of advertising literature (from catalogues to leaflets).

V. V. Melnikov. The advertising of new commodities should be organized through sale-exhibitions of fabrics and articles, through the press, radio, and television. A good example of advertising is BURDA magazine.

V. I. Shurupov. The advertising should be closely linked with the work of the fashion designers, who must do more to propagandize the assortment in the trade system. A role can also be played by television, which currently penetrates into all corners of our country. It is also important to involve designers when furnishing display windows with fashionable articles with the accent on the future prospect.

L. Straume. Through the press, television, and movies, and definitely in company and other stores on mannequins.

The work done by the enterprises to advertise their output, including new items, should become the norm. Unfortunately, as of today, at many enterprises in the branch this work, practically speaking, is nonexistent. Production, advertising, sale — these should be a single, precisely

planned complex. Taking into consideration the rights given to the enterprises, including the possibility of going out into the world market on a broader scale, the importance of each component of that complex has been increasing. But advertising requires money. And with respect to the main topic of your question — the advertising of new commodities — then it is necessary first of all to resolve the financial aspect of the question.

According to the scheme for the distribution of the currently effective price increases for the production of output with the index N ["new item"], there exist deductions to be paid into the discount fund, but unfortunately there are no deductions for commercial advertising, although this advertising is necessary to offer the commodity to the market, to present its "visiting card" for consolidation at the market.

The work of advertising should be done with a consideration of all the forms and methods that are known in that area, and with a consideration of the effectiveness of the commodity. But it is definitely also necessary to make broad use of the function of the company's trade mark. And in order for the company's trade mark to become a means of advertising, that trade mark itself must become an object of advertising, that is, it must be used on the commodity packaging materials, on signs, in neon advertising, printed publications, the design of exhibitions, trade halls, etc.

Furthermore, it is necessary to improve packaging and labeling. Industrial enterprises must attempt to isolate their own commodities from the overall mass on the basis of their quality and design.

Advertising must be an "assistant" not when it has become difficult to sell the commodity, but while it is still at the developmental stage. It is necessary to convince the consumer that he must wait for the innovation to appear, that is, the work of advertising the new commodities should be done long before the article itself appears.

It is important constantly to search for nontraditional forms of advertising: to use young people's discotheques, theatricalized shows, etc.

And, finally, it will be necessary to increase and to vary the printed output: its assortment (booklets, brochures), the number of titles, and the size of the printing runs.

V. Ye. Tikhonov. The Ministry of Trade and the wholesale and retail trade organizations in the outlying areas constantly carry out advertising and informational work in the process of trade activity: the production of advertising films, printed advertising, as well as recorded radio and television programs, sale-exhibitions, consumer conferences, etc.

However, in the ministry's opinion, the advertising of promising fashionable articles should be carried out basically by the manufacturer and VTsAMlegprom.

A. A. Kotova. How does the trade system take into consideration the experience of the 1987 trade fair? Isn't it well known that the fair that was held did not succeed in taking into consideration the basic principles enunciated in the decree of the CPSU Central Committee and the USSR Council of Ministers concerning the improvement of planning and the improvement of the economic mechanism?

V. Ye. Tikhonov. At the republic's April 1987 wholesale fair for the sale of textile commodities, there was free sale of fabrics in accordance with the allocations of the market and nonmarket organizations of the RSFSR.

The enterprises in the textile industry were assigned volumes and an assortment of fabrics for interrepublic exhibitions and nationwide needs, in such a way as to exclude them from the plan for sales at the republic (RSFSR) fair. Determination was also made of the volumes and the group assortment of fabrics for sale in accordance with the allocation of the garment enterprises, which were granted the right to be the first to purchase.

It should be noted that, at the fair, the customers had practically no opportunity to choose the necessary assortment and were unable to express any requirements to industry, since, under the conditions of the insufficiency of many types of fabrics, the manufacturer-suppliers, taking advantage of the customers' right to make a free choice, dictated to the customers their own terms, which the customers were forced to agree to if they did not take the risk of being left without any commodity. But even under these conditions, fabrics with a total length of 344 million meters and a total value of 373 million rubles were unsold, of which enterprises in the garment industry did not purchase 325 million meters. Basically, these were cotton and linen underwear fabrics, smooth-dyed prints and coarse calicoes, bleached staple fabrics, and other fabrics that were included in the draft versions of the production plan in volumes exceeding the RSFSR Mintorg [Ministry of Trade] requisitions for their production (for example, requisitions for cotton underwear fabrics were 534 million meters, with plan of 645 million meters; and linen, respectively 35 and 54 million meters).

In addition, by the beginning of the republic fair, the enterprises in the textile industry underplaced for 1988, as compared with the established assignment, 112.3 million meters of fabrics with a total value of 1.5 billion rubles (as compared with the rated indicator in retail prices). By the end of the fair, the quantity of unplaced fabrics dropped to 59.2 million meters with a total value of 849 million rubles. In the process, individual enterprises (including Ivkhlopprom), without the customers' consent, covered the shortage by means of underwear fabrics.

L. K. Andreyev. Many things in resolving the problem of demand, sales, and increasing people's interest in fashionable fabrics and in work with the assortment depends not only upon the trade system, but also upon the extent to which close and mutually advantageous ties have been

established between the textile and garment enterprises. It is necessary to take a very large number of steps to break the established negative stereotype of the existing relations. At textile factories the people sometimes do not know what kind of assortment their partners, the garment factories, are producing, they do not study or attempt to improve the forms of commercial work, and advertising is absolutely nonexistent.

The textile industries, although they have changed over to work under conditions of self-payment and self-financing, continue to violate crudely the delivery terms. But the customers do not remain in debt: as a result of the large balances of fabrics and the nonfulfillment of their own pledges to the trade system, they sometimes do not even unseal or inspect the container of fabrics, but instead send it back as unsuitable fabric to the textile enterprises, forgetting at such time the interests both of their partner and of the state, and frequently actions such as these are described as a decisive struggle against defective output.

During current years the problem that has remained the chief one in the textile branch is the problem of the sharp improvement of the work performed in the finishing production entities. A program of specific steps and recommendations already exists, as does the textile workers' desire to take serious steps to correct the situation.

A. A. Kotova. Under the present-day conditions the enterprises in the textile industry must construct a more flexible assortment policy. In this regard also there has been a sharp increase in the role played by workers in the artistic specialties.

What are the basic difficulties that currently exist in the work of the creative shops?

S. P. Metelkina. They are, first of all, the insufficient information about how the produced assortment is selling in the various regions of the country; the weak study of demand and the insufficient influence that the results of that study has upon the artists' work; and insufficient information from abroad.

There are also difficulties in providing the shops with materials (paints, brushes, paper, etc.). It is necessary to increase more automation into the work of the creative specialists and to relieve them of inappropriate job duties.

V. V. Melnikov. Actually, at our enterprises the artist is poorly informed about the prospects of developing the assortment and the trends that fashion is following, or about the work experience of artists in other countries, including the socialist ones. In the wool branch, the difficulties in the work of improving the assortment are aggravated, in addition, by the lack of a stable raw-materials base. The raw materials should come to the enterprise from the same wool-scouring shop, since any changes in the raw-materials suppliers require a difficult technological mode for processing the wool.

The artists and designers are limited in their creative work by the amount of yarn to be used (on the basis of structure and color scheme), and by the capabilities of the weaving equipment (processing of yarn with high linear densities, novelty yarns, self-twisting yarn, etc.).

L. Straume. It must be re-emphasized that the success of the branch work in improving the quality and assortment of output depends chiefly upon the extent to which the enterprises are provided with modern spinning, knitting, finishing, sewing, and other equipment, with raw materials that correspond to the current fashion trends, with notions, and with finishing materials. The measures being carried out by the ministries of light industry (the workers on the commission, KhTS, etc.) must be organized more efficiently.

As for the artists, they must have the opportunity to use creative days at their own discretion (providing they have fulfilled their creative plan), and should definitely be given the opportunity once a year to go on creative assignments or to attend special weeklong festivals, including for the purpose of visiting international fairs and exhibitions in order to study the development of international fashions.

T. N. Shubenkova. It is frequently very difficult for the artists to realize their concepts. Both 10-15 years ago and at the present time we receive fibers in a single color range — dark blue, brown, black. What print could possibly enliven that gloomy background? Modern fabrics must be bright, must catch the eye, and that requires good, stable dyes. But the dye producers in our country do not provide us with the proper fibers, either with regard to quality or with regard to color range.

In their requisitions, the customers of the output rarely state clearly how much fabric, of what style, color, and design they need. Our garment workers should take a lesson from foreign companies, which are prepare the production orders in a precise, concrete manner and which chose the most stylish fabrics.

Yu. G. Medvedev. In his creative work the artist is limited by the technological and technical barriers because of the fact that the engraving shops are poorly provided with new modern equipment to reproduce the artist's concept on the fabric. The traditional methods of engraving, such as the *moletirnyy* [meaning unknown] method and the pantograph method, while providing good results during the reproduction of the prints, are relatively unproductive and are very labor-intensive. They are gradually dying out as a result of the shortage of specialists. The photomechanical process is the most progressive one, but it has not been provided with the latest technological equipment or with materials.

A. A. Kotova. How is the enterprise supposed to increase the role of the artist and the other workers in the creative occupations, and to increase their influence upon the production of a stylist new assortment?

T. I. Balandina. The responsibility and the right to prepare the program assortment and select the articles that have been developed by the Houses of Models and purchased by the enterprise must be the competency primarily of the artist, rather than the officials at the enterprise. The artist must be given the right to check the esthetic quality of the output being produced and to stop the production of articles in the event that they do not conform to the standard prototypes.

S. P. Metelkina. The artist must carry out the originator's inspection as the article passed through all stages of production. Any color change should be made only with the consent of the originator or the color specialist. The artist must have the right to ban the production of output if his concept as originator has been disregarded.

V. V. Melnikov. It is important for the designer at the enterprise to have a self-interest in developing a new assortment (with indexes N and D), for him to be able to take a creative approach to the designing of new fabrics, to engage in his own work, rather than search for yarns, push hand-trucks, or "scrounge up" equipment. That is, what is needed is a high proficiency level plus normal working conditions, plus a material self-interest. The chief designer must be at the level of the deputy chief engineer.

Yu. G. Medvedev. The textile artist is the representative of the enterprise's single collective, which is participating in the artistic design of fabrics in various color schemes and in the production of high-grade output that conforms to the requirements of modern fashion. He can bring his creative concepts to life when the production possibilities conform to them, rather than when he adapts to it. Without the creation of the appropriate working conditions, the role of the artist at the enterprise will not become the leading or vanguard role.

V. I. Shurupov. Giving encouragement to the work of specialists in the artistic occupations (psychological and material incentives), the showing of greater trust, good working conditions, and the providing of them with the necessary materials and with information for their professional work — all these things will increase the importance of the artist at the enterprise and will exert an influence upon the production of stylish new articles.

A.A. Kotova. Is the narrow specialization of enterprises in the production of a limited assortment any guarantee of high quality, and to what degree would it be desirable to expand the output assortment?

S. P. Metelkina. I assume that the situation is different in each subbranch.

T. I. Balandina. This kind of specialization cannot be a guarantee of high quality, although it can exert a substantial influence upon raising the quality level. The assortment should be expanded as the need increases, on the basis of data provided by sociologists and demand forecasts, that is, in conformity with the needs of all population groups.

Yu. G. Medvedev. At textile enterprises, narrow specialization in the production of a limited assortment makes it possible to assign the technological processes and equipment permanently to definite fabric items and to improve the quality of the output, does not completely guarantee the high quality of the output.

L. Straume. In the knitting industry, narrow specialization of the enterprises cannot always be a guarantee of the high quality of the output, but partially can promote the production of high-quality articles. We are convinced that a fashionable assortment should be produced at small enterprises employing 100-200 workers. Enterprises such as this have the conditions for the rapid restructuring of production to produce fashionable items in small consignments.

A. A. Kotova. Of course, it is impossible in a single discussion to encompass the entire scope of the tasks of producing output that has an increased demand. But one thing is obvious: the problems that were raised by the administrators and the specialists who participated in the discussion are soluble. But why has it been so slow and so difficult to restructure the branch? Obviously the departmental barriers continue to act as a hindrance, and local interests continue to be strong.

A very important task that will have to be resolved immediately is the task of organically coordinating the interests of the enterprises, ministries, and departments with the customers' demands. We must be concerned not with the simple breaking away from obsolete administrative schemes and structures, but with the complete use of economic levers in the process of production and the sale of output. We propose making these questions the theme of a future discussion on the pages of our magazine.

Editorial note. The roundtable materials have been sent to USSR Minlegprom [Ministry of Light Industry] and TsP [Central Board] of NTologprom [Scientific-Technical Society of Light Industry], with the request that they review the comments and recommendations in order to make the necessary decisions and to inform the readers of this magazine about them.

We also request our readers to inform us of their recommendations for resolving the questions that were raised.

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ENERGY COMPLEX ORGANIZATION

Oil, Gas Field Workers' Discipline Legislation Passed

18220047 Moscow SOBRANIYE POSTANOVLENIY PRAVITELSTVA SOYUZA SOVETSKIKH RESPUBLIK in Russian No 50, 1987 pp 1043-1054

[USSR Council of Ministers Decree: Article 165 "Approval of the Disciplinary Charter for workers at enterprises and organizations engaged in the assimilation of gas and oil fields with high hydrogen-sulfide content"]

[Text] 165—Approval of the Disciplinary Charter for workers of enterprises and organizations engaged in assimilating gas and oil fields with high hydrogen-sulfide content.

The USSR Council of Ministers decrees:

the approval of the proposed Disciplinary Charter for workers of enterprises and organizations engaged in assimilating gas and oil fields with high hydrogen-sulfide content.

Chairman of the USSR Council of Ministers N. Ryzhkov

Affairs Administrator of the USSR Council of Ministers M. Smirnyukov.

Moscow, Kremlin, 30 Oct 1987. No. 1216.

Disciplinary Charter

for Workers of Enterprises and Organizations Engaged in Assimilating Gas and Oil Fields with High Hydrogen-Sulfide Content

I. General Provisions

1. The national-economic significance and specific features of operations in assimilating gas and oil fields with high hydrogen-sulfide content requires good organization, model discipline and the conscientious fulfillment of work duties by all workers engaged in these operations.

Workers' violation of discipline can create a threat to the life and health of people and is the cause of accidents, mishaps, the infliction of considerable damage to socialist property, pollution of the environment and disruption of the fulfillment of state plans and targets.

2. This Charter extends to all workers of enterprises and organizations engaged in the construction, assimilation and operation of gas and oil fields with high hydrogen-sulfide content, as well as the execution of repair and start-up operations at these fields.

The list of categories of workers to whom the effect of this Charter extends is approved by the ministries and departments of the USSR, whose system includes the enterprises and organizations accomplishing the assimilation of the indicated fields, and is coordinated with the corresponding trade-union central committees.

The list of gas and oil fields with high hydrogen-sulfide content is approved by USSR Gosgortekhnadzor [State Committee for Supervision of Safe Working Practices in Industry and for Mine Supervision] and coordinated with the USSR Ministry of Health.

3. The discipline of workers employed at the site of gas and oil fields with high hydrogen-sulfide content consists of their strict observance of the procedures and rules stipulated by existing legislation, orders and instructions of ministries, departments and other standard documents relating to their activity, the conscientious fulfillment of the official duties charged to them, an intelligent and creative attitude toward their work and the discovery and utilization of existing reserves and the elimination of shortcomings, as well as the precise and timely execution of the orders and directives of supervisors.

Discipline is ensured by an intelligent attitude toward work, the cultivation of high ideological and moral ideals and business qualities among the workers, the development of a feeling of responsibility for the fulfillment of official duties, the exactingness of supervisors, the skillful combination and correction application of persuasion, encouragement and disciplinary action and the effective influence of labor collectives on the consciousness and behavior of each member of the collective.

4. The worker is obliged:

a) to know his field and the matters entrusted to him well, to execute skillfully, precisely and in timely fashion the duties charged to him, display the necessary initiative in work, a creative attitude toward labor and continuously improve his professional skill and business qualifications;

b) to assist in every way in ensuring the reliability and safety of the work at the facilities of gas and oil fields, be ready at all times to help eliminate emergencies and avert their development, take the appropriate measures when accidents arise, report them immediately to the operations manager and act in strict accordance with the plan for the elimination of accidents.

Appearance at work at the summons of the administration to eliminate accidents or to avert them is compulsory;

c) to ensure a strict regimen of economy, the efficient utilization of material resources, the preservation of socialist property, participation in the discovery and elimination of the causes and conditions facilitating waste and the wasteful consumption of material assets;

d) know and unwaveringly observe the established technology for the execution of operations, the rules and norms for labor protection, the safe execution of operations, the technical operation of equipment, production sanitation and labor hygiene, the protection of the environment, rules for the utilization of individual protection equipment, fire safety and other rules and norms related to his labor activity; being at a site, having on hand the stipulated lists and instructions for individual protection equipment, including breathing apparatus;

e) strictly to observe executive discipline, established procedure for visiting and being at the facilities of gas and oil fields, the rules for evacuation upon sounding of the "gas danger" alarm and to render aid to those in need;

f) take examinations according to established procedure on knowledge of regulations and instructions, rules and norms for the operation of equipment and the safe execution of work and gas safety.

Individuals not passing the examinations are not permitted to work at gas- and oil-field facilities and are transferred with their consent (temporarily, until the examinations are passed) to other work at the pay rate for the work being done. In the event of the worker's refusal to be transferred, the supervisor may abrogate the labor contract with him under established procedure;

g) To observe unswervingly the procedures and rules stipulated by existing legislation, orders and instructions of ministries and departments and other standard documents related to his activity and the precise and timely fulfillment of the orders and directives of supervisors, as well as the orders of state surveillance organs;

h) to conduct a regular inspection of the work place, equipment and other technical materials and to take steps for the immediate removal of deviations in their work that are discovered as well as the causes and conditions that impede or make more difficult the execution of operations or create a hazard;

i) to preserve strictly state and official secrecy and to observe established procedure for the storage of documents;

j) to fulfill production targets, strive to raise labor productivity and work quality, reduce costs and improve other work indicators, incorporate new equipment and technology and scientific methods and techniques of labor activity to the utmost so as to make efficient use of equipment;

k) observe the rules for socialist communal living and the norms of communist morality, conduct oneself with dignity at work and away from work, to keep other workers from violating labor discipline and public order and assist in the reinforcement of discipline in the labor collective.

5. The supervisor is obliged:

a) to organize the labor of subordinates and mutual relations in the collective correctly, ensure the fulfillment of collective plan targets, raise the efficiency of production and the quality of work and incorporate the scientific organization of labor and management;

b) to ensure the economical and efficient utilization of material resources, a thrifty attitude of subordinates toward socialist property and the discovery and elimination of causes and conditions that facilitate waste and the wasteful consumption of material assets;

c) to cultivate among subordinates an intelligent attitude toward labor and high ideological, moral and business qualities, support the initiative and creative activeness of the workers and assist their participation in the discovery and utilization of reserves and the elimination of shortcomings;

d) to strictly observe the requirements of socialist legality, issue orders and directives to subordinates clearly and verify the precision and timeliness of their execution;

e) to take all necessary steps to reinforce order and discipline and reduce losses of work time and personnel turnover;

f) to ensure the observance of the pass regimen established for gas- and oil-field facilities, as well as the rules for the transit of transportation equipment and repair and construction equipment between facilities;

g) to ensure the observance of established rules and norms for labor safety, safety equipment, the technical operation of equipment and machinery, production sanitation, gas and fire safety, the protection of the environment and other rules and norms related to the labor activity of the workers; to ensure the working condition of the communications and gas-danger warning systems at gas- and oil-field facilities;

h) to develop plans and periodically conduct training on the organization of evacuation measures at the "gas-danger" signal;

i) skillfully to combine exactingness toward subordinates with concern for them, be sensitive to the people and their needs and aspirations, encourage workers who distinguish themselves in the fulfillment of work duties and social duty and strictly reprimand violators of labor and technological discipline, taking into account the opinion of the labor collective therein;

j) to set an example for subordinates in the model execution of official duty and dignified behavior both at work and in free time.

The supervisor bears responsibility for the state of discipline among subordinates, as well as the failure to execute the duties charged to him by this Charter.

The supervisor should pay particular attention to the timely discovery and elimination of the causes and conditions that cause violations of discipline, the prevention of misdemeanors by subordinates, the creation of an intolerant attitude toward violations of discipline and the utilization of the power of social influence in the fight against these violations.

6. The subordinate as a rule receives any instructions regarding the work from his immediate supervisor. In the event instructions are received from a higher supervisor, the worker is obliged to fulfill them and inform his immediate supervisor of it.

7. Workers for whom a uniform and distinguishing marks are stipulated should be in uniform in the execution of official duties, if they are not required therein to wear special work clothes.

8. Every worker to whom this Charter extends is obliged to know the Charter and fulfill its requirements precisely.

II. Incentives

9. Workers are encouraged toward the model fulfillment of labor duties, the overfulfillment of production targets, success in socialist competition, raising labor productivity, improving the quality of work, useful initiative and creative activity, innovative and inventive activity, the strict observance of norms and rules for the safe execution of work and protection of the environment, a thrifty attitude toward socialist property, innovation in labor, long and irreproachable labor and the fulfillment of individual duties, as well as toward valor and selflessness as displayed in the fulfillment of official duty.

10. The following incentives are used for workers:

- a) expression of gratitude;
- b) payment of bonuses;
- c) award of a valuable gift;
- d) award of a Certificate of Honor;
- e) entry in the Book of Honor or on the Board of Honor;
- f) awarding of the title of best worker for a given profession or other titles for work success;
- g) award of a breast pin (*znachok*).

The simultaneous application of several incentives to a worker is permitted.

11. Workers that successfully and conscientiously fulfill their labor obligations are first and foremost granted benefits and privileges in the realm of social, cultural, housing and domestic services. These workers are also granted preference in work advancement.

Workers can be presented with state awards of the USSR and the union republics under established procedure for outstanding achievements in labor and displays of selflessness, heroism and valor.

12. Incentives are employed under the following procedure:

- a) every supervisor has the right to express gratitude to subordinate workers. The expression of gratitude is made in an order and coordinated with the corresponding trade-union committee;
- b) the issue of bonuses and the award of valuable gifts is done by a supervisor that has the right to hire (approval of the position of the selected worker) and dispense funds intended for these purposes, in conjunction with the corresponding trade-union committee;
- c) the awarding of a Certificate of Honor, entry into the Book of Honor or onto the Board of Honor is done by supervisors that have the right to hire (job confirmation) in conjunction with the corresponding trade-union committee;
- d) the awarding of a Certificate of Honor of a ministry (department) of the USSR, the awarding of the title of best worker in the given profession or other titles for work success and the awarding of breast pins (*znachki*) are done according to established procedure.

Incentives, aside from oral gratitude, are made in an order and brought to the attention of every collective and entered in the work booklet of the worker.

13. In the absence of the appropriate supervisor, incentives can be applied by officials that are acting in that capacity.

14. If an incentive that goes beyond the bounds of the rights granted to the given supervisor must be applied to a worker, he petitions on the matter before higher-ranking supervisors.

A higher-ranking supervisor enjoys the rights of incentives that belong to a lower-ranking supervisor to the full.

Supervisors of ministries and departments of the USSR and their deputies have the right to employ all of the incentives stipulated in this Charter.

III. Disciplinary Action

15. The following disciplinary actions are used in relation to workers for violations of labor discipline:

- a) reproof;
- b) reprimand;
- c) severe reprimand;

d) transfer to lower-paying work for up to three months or demotion to a lesser job for the same term.

For regular violations of labor discipline, absences without plausible reason or appearance at work in an intoxicated state, a worker can be transferred to another lower-paying job or demoted to another lower position for a term indicated in the first paragraph of this subclause;

e) transfer to work not connected with the operation of gas- and oil-field facilities with high hydrogen-sulfide content, as well as the execution of repair and start-up work at them, taking into account the profession (field), for up to one year;

f) dismissal.

Only one disciplinary action can be employed for each violation of labor discipline.

16. The transfer of a worker to a lower-paying job for a term of up to three months or demotion to a lower position for the same period is done with a regard for the profession (field), and in cases of regular violations of labor discipline, absence without plausible reason or appearance at work in an intoxicated state, can be done without regard for the profession (field).

The transfer of a worker as a disciplinary action to such work that is contrary to him for reasons of health with medical attestation is not permitted.

Workers engaged in the construction and operation of gas- and oil-field facilities, as well as the execution of repair and start-up work at these facilities, are transferred to other work in accordance with subclauses d and e of Clause 15 of this Charter, and before their restoration in the former job they must pass examinations on knowledge of the rules, norms and instructions for operations and the safe execution of the work.

A worker who has twice failed to pass these examinations is transferred with his consent to other work with a regard for his field and qualifications, and upon refusal to be transferred can be dismissed under the procedure stipulated by existing legislation.

17. Disciplinary action in the form of dismissal can be employed toward a worker:

—for his regular failure to fulfill his duties without plausible reasons, if disciplinary or social measures had earlier been employed toward him;

—for absences (including absence from work of over three hours in the course of a work day) without plausible reason;

—for appearance at work in an intoxicated state;

—for committing theft in the workplace (including petty theft) of state or public property, as stipulated by a court sentence taking legal effect or decree of an organ under whose purview the imposition of administrative actions or the application of measures of social influence falls;

—for a one-time gross violation of discipline that threatens the safety of production operations at gas- and oil-field facilities with high hydrogen-sulfide content or create a danger to the life and health of people.

The dismissal of a worker is done in coordination with the trade-union committee, with the exception of instances that are envisaged by existing legislation, as well as instances of the gross violation of discipline that threaten the safety of production operations at gas- and oil-field facilities or create danger to the life and health of people.

The lists of gross violations of discipline that threaten the safety of production operations at gas- and oil-field facilities or create a danger to the life and health of people, and the categories of workers that can be dismissed for these violations without the consent of the trade-union committee, are approved by the corresponding ministries and departments of the USSR in coordination with the sector trade-union central committees.

18. The employment of disciplinary action does not release the worker who committed the violation of discipline from material and administrative responsibility stipulated by existing legislation, and can be combined with full or partial deprivation of bonuses and rewards for work results and with limitations on privileges in the realm of social, cultural, housing and domestic services as well.

19. A supervisor should not leave a single violation of discipline by a subordinate unanswered.

In the event it is not expedient to employ disciplinary action, a supervisor should warn the worker of the necessity of observing discipline or send the materials on the disciplinary offense for the consideration of the labor collective, comrades' court or social organization.

20. In the imposition of disciplinary action, the supervisor is obliged to observe the rules for official ethics and not permit the diminishment of the personal dignity of the subordinate.

21. Disciplinary action should correspond to the degree of guilt of the worker and the severity of the disciplinary violation he committed.

In determining measures of disciplinary action, the harm caused, the circumstances under which the violation was committed and its motives, as well as the prior work of the individual that committed the disciplinary violation, should be taken into account.

22. Disciplinary actions are employed in the following order:

a) oral reproof to the subordinate can be made by any supervisor;

b) a supervisor that has the right to hire or to confirm a selected worker in a job, as well as a higher-level supervisor, can impose any disciplinary action on the worker envisaged by Clause 15 of this Charter.

The deputies of the indicated supervisors can impose punishment in the form of reproof, reprimand and severe reprimand;

c) a supervisor with the right to promulgate orders can impose punishment in the form of reproof, reprimand and strict reprimand on those of his subordinates that are appointed to the job (confirmed in their position) by higher-level supervisors.

23. In the absence of the appropriate supervisors, disciplinary actions may be taken by officials acting in their stead.

24. If it is necessary to take disciplinary action with a regard for the severity of the offense that the given supervisor is not empowered to apply, he petitions higher-level supervisors regarding this.

25. In cases where criminal liability is stipulated for a legal offense, the supervisor is obligated to transmit the appropriate materials to inquiry or preliminary investigation organs.

26. The supervisor is obliged to investigate comprehensively and objectively the motives and causes for a disciplinary offense that has been committed and demand an explanation in written or oral form from the worker that committed this offense before the imposition of punishment on the worker.

The refusal to give a written explanation does not release the accused worker of disciplinary responsibility.

27. Disciplinary action, aside from oral reproof, is explained in an order with which the worker should be acquainted upon receipt in a three-day period from the time the order is promulgated.

28. Disciplinary action is imposed no later than one month after the detection of the disciplinary violation, without counting the time of a worker's illness or being on vacation.

In the event of the transmission of materials to organs of inquiry or preliminary investigation, as well as for the consideration of labor collectives, comrades' courts or social organizations, the disciplinary action is imposed no later than one month from the day of refusal to instigate or the cessation of the criminal case or the pronouncement of the decision on putting the question of imposing disciplinary action measures before the appropriate supervisor by the labor collective, comrades' court or social organization.

Disciplinary action cannot be imposed later than six months after the offense is committed, and upon the results of an inspection of financial and business activity, no later than two years after the day it was committed. This time period does not include the time for the prosecution of the case under criminal procedure.

29. A higher-level supervisor has the right to abrogate, lessen or increase (within the bounds of the rights granted to him) the disciplinary action imposed by a lower-level supervisor if he finds that the action does not correspond to the severity of the disciplinary violation committed.

An increase of the disciplinary action is not permitted if the question of imposing the action is considered at the appeal of the worker.

An increase of the disciplinary action can be done only within the bounds of the time periods stipulated by Clause 28 of this Charter.

30. The supervisors of ministries and departments of the USSR have the right to impose disciplinary action as stipulated by this Charter to the full extent, and their deputies can impose all disciplinary actions aside from demotion to a lower position, transfer to other work and dismissal of individuals appointed (approved for the position) by the supervisors of ministries and departments.

31. The worker is considered not to have a disciplinary record if over the course of a year from the imposition of a disciplinary action he has not been subjected to a new disciplinary action, but this does not entail restoration of a worker to a job who was dismissed in accordance with subclause f of Clause 15 of this Charter.

32. The supervisor who has imposed a disciplinary action on a guilty worker, or a higher-level supervisor, may remove this action before the expiration of a year if the worker deserves it through a conscientious attitude to the work and has not committed a new violation of discipline.

A request for the early removal of a disciplinary action should be considered by the supervisor no later than 15 days after its receipt.

33. Over the effective period of the disciplinary action, measures of incentive as envisaged by this Charter are not applicable to the worker.

34. The worker may, over the course of three months following his acquaintance with the order for the imposition of disciplinary action on him, appeal this action.

Appeal does not halt the execution of the order for the imposition of disciplinary action.

IV. Concluding Provisions

35. The worker's appeal of an illegal or unlawful imposition of disciplinary action or the supervisor's violation of the rights granted to him by this Charter or failure to fulfill his duties is considered by a higher-level supervisor.

36. The higher-level supervisor is obliged to consider the appeal in a comprehensive and objective manner and issue his decision without delay, and no later than 15 days from the day of its receipt.

The higher-level supervisor should inform the interested worker and supervisor whose action is appealed of the results of his review of the appeal.

37. A supervisor who does not employ the disciplinary rights granted to him or exceeds them bears responsibility under established procedure.

38. Every higher-level supervisor constantly monitors both the overall state of discipline and the unwavering and correct implementation by all supervisors of the rights granted to them and the duties charged to them by this Charter.

12821

Medical Criteria for Selecting Power Plant Personnel

18220040a Kiev *ENERGETIKA* 1

ELEKTRIFIKATSIYA in Russian No 4, Oct-Dec 87
pp 48-50

[Article by V.V. Kalnish, candidate in biological sciences, and N.I. Sytnik, biologist of the Kiev Scientific Research Institute of Work Hygiene and Occupational Diseases: "Psychophysiological Criteria for Occupational Selection of Power Plant Operations Personnel"]

[Text] Today's occupations directed toward power plant operation impose quite rigid requirements on a person working in this sector. This pertains, first of all, to the state of his health, psychophysiological status and personal characteristics.

Occupational selection not only assumes solving the problem of determining suitability for work, but also poses a number of questions, requiring special

approaches to resolve them. These are: predicting the occupational longevity of the individual, the time taken to master the occupational skills and the quality of work in the occupation. The latter question is a key one, since neither rapid mastery of occupational skills nor long-time work activity can predetermine efficiency in operating power equipment. It must be noted that the quality of work depends to a great degree on the person's psychophysiological functioning. This is because the occupational groups that control operation of power equipment should receive a large flow of information from its various carriers (instruments, telephone communication, reports of subordinates, etc.), filter out the information necessary in a complicated production situation, process it rapidly and make responsible decisions. All this imposes special demands on the psychophysiological state of the operator, specifically, on the strength and flexibility of the neural processes, concentration of attention, volume of temporary memory and physiological cost of the work performed.

The highest demand on the individual psychophysiological qualities of an operator are imposed by work under the unpredictable conditions of an emergency situation and in the periods of starting up and shutting down equipment. According to the data of time studies [1], 60-70% of the work time of a TES operator-machine operator consists of time spent on concentrated supervision of the course of an industrial process, 30-40%—time spent in active work (20-25%—receiving and transmitting information according to the selector, 5-25%—adjusting the equipment operation parameters). The work process takes place under conditions of hypodynamia—in the course of a shift, operators cover 1.5-3.0 km—and does not entail considerable physical effort.

The need to be constantly in a state of tension and readiness for emergency action and the high responsibility for the results of one's work create an unfavorable emotional background and cause great nervous-emotional stress for workers in the course of their job.

Occupational psychophysiological selection is one of the measures to increase the work reliability of power plant operations personnel. Its practical implementation presupposes the presence of a set of indicators which would permit a high degree of certainty in diagnosing the occupational suitability or unsuitability of a worker.

This study has been devoted to establishing a system of psychophysiological criteria for occupational selection of TES operators-machine operators.

Taking part in it were 38 machine operators from the boiler and turbine shop of the Kiev TET-5, ranging in age from 23-45 years and with 2-26 years work experience in their specialty. The choice of methodology for the experimental study was directed toward studying the following indicators of higher nervous activity: short-time memory, concentration and switch of attention,

mature fitness for work, speed of simple and differentiated visual-motor reactions, balance of stimulation-inhibition and functional mobility.

A detailed description of these procedures is given in special literature [1-3].

The degree of physiological input by the organism to perform work activity was evaluated by mathematical analysis of the heart rhythm. From the results of recording 100 R-R intervals, the following calculations were made: the average duration of the R-R interval, the spread of cardiocyclic values and the R.M. Bayevskiy stress index.

The efficiency of the production activity of electric power plant personnel under normal production circumstances and in an emergency situation was evaluated by senior engineering-technical personnel on seven-point scales.

The overall duration of the experiment is 40-45 minutes. Most of the procedures can be carried out on an electronic computer. In this case the time for the study is considerably shortened [2].

According to the results of the experts' inquiry, three groups of those tested (A, B and C) were singled out, respectively with low, average and high occupational successfulness.

The values of most of the psychophysiological functions (except for memory and visual fitness for work) definitely differed in operators of groups A, B and C.

For example, in group C, it was noted that the speeds of simple and differentiated visual-motor reactions, concentration and switching attention were definitely higher. The numerical values of these indicators among the persons in group A were the lowest. Some 86% of the group A operators had a relatively low level of functional mobility; 170-75 stimuli/min. In group C the percentage of those tested with these mobility values was reduced to 30, and, finally, 75% of group C consisted of persons with high values in this indicator (80-85 stimuli/min).

In the structure of errors committed by those being tested, in the experiment to alter the signal value of the stimuli, among the persons of group C, errors of type I (reaction to positive stimulus) relatively dominated. Among group B operators there were more errors of type II (reaction to a positive stimulus with the wrong hand), and among group A operators, type III errors (absence of reaction to a positive stimulus) predominated (Fig. 1).

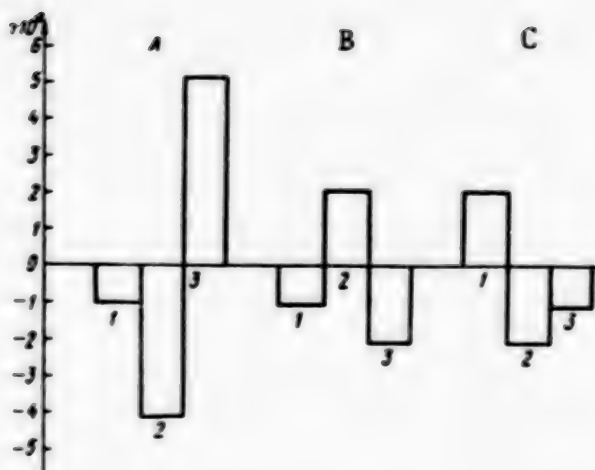


Fig. 1. Deviations From the Average of Individual Structures of Errors Made by Operators of Varying Occupational Skill:

A, B, C—groups A, B and C respectively; 1, 2, 3—Type I, II, III errors respectively.

According to the data [3], type I errors are connected with the predominance of the excitation process, type II errors—with insufficient concentration on the stimulating process and type III errors—with domination of the inhibiting processes.

Therefore, analyzing the structure of the errors committed by those tested in this study makes it possible to assume a certain predominance of the process of stimulation with good concentration among operators with high occupational success and domination of the inhibiting processes among operators with low occupational success. Low concentration was noted among the group B persons being tested when there was high power of the stimulating processes.

Analysis of the cardiac rhythm indicators attests to the higher emotional stress during work activity among machine operators with high occupational success. They are characterized by a predominance of tonus of the sympathetic nervous system, while among the group A and B representatives, parasympathetic influences were more marked.

Considering that, according to the data in the literature, sympathetic adjustment ensures an improvement in adaptive possibilities, contributes to generalization of the neural processes and raises the discipline of activity and the sensory response, the relation of heightened emotional tension to work success for the operators-machine operators is fully in conformity to principle.

A correlation analysis made from the results of the study confirmed the great importance of the function of attention, duration of the latent periods of visual-motor

reactions, functional mobility, balance of stimulation-inhibition and indicators of cardiac rhythm as criteria for occupational suitability for a given type of work.

Determining the aggregate of occupationally important qualities is the first important step in solving the problem of the occupational suitability of an operator. When the individual values of all the psychophysiological indicators of a person tested are better than the minimum permissible, the question of his occupational suitability is solved unequivocally. No difficulties arise in the opposite case either, when the operator fits within the permissible limits in not one single occupationally important quality. In practice, however, such "pure" cases of suitability or unsuitability are encountered extremely rarely, and it becomes difficult to determine the occupational suitability of a worker.

Because of this, the need also arises for an integrated evaluation of the correspondence of an operator's psychophysiological status to the demands of the occupation.

To obtain this comprehensive evaluation, we used the modified method of V.A. Buzunov and coauthors [4].

This method makes it possible, through determining for each person tested the matrices of the indices I_{ij} , to eliminate the dimensionality of the indicators studied. Calculation of the indices I_{ij} depends on how the given psychophysiological function correlates with the success of the operators' work—positively or negatively. Then the average individual index I_i is computed, as the arithmetical mean I_{ij} of the person being tested. The range of variation of the indices I_{ij} is evaluated by the coefficient of variation CV_i .

Integrated evaluations of the levels of occupational suitability of operators are determined by the individual values of the indicators I_i and CV_i . Their graphic distribution is given in Fig. 2, which plots, for the entire group of persons tested, the average values of the index I_i and the coefficient of variation

$$CV_i \text{ } (\bar{I}_i \text{ and } \bar{CV}_i$$

respectively), as well as their root-mean-square deviations

$$(\sigma_I \text{ and } \sigma_{CV})$$

As can be seen, integrated evaluations of operators with varying success in work are found in different zones for I_i and CV_i . Some 88% of the integrated evaluations of group C operators and 77% of the evaluations of group B operators are in zone 1

$$(\bar{I}_i \pm \sigma_i, \bar{CV}_i \pm \sigma_{CV})$$

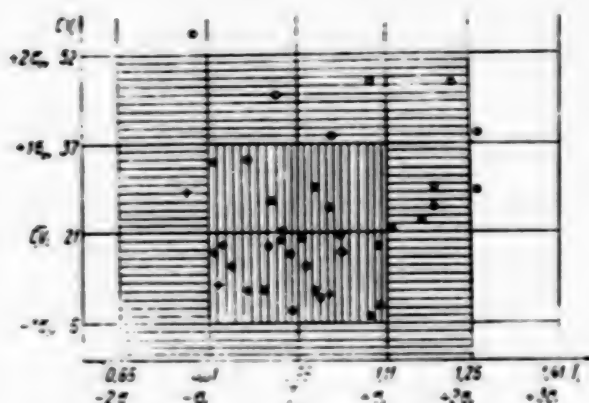


Fig. 2. Distribution of Integrated Evaluations of Work Fitness Levels of Operators-Machine Operators of Power Units:

+ — group of high, — average, — low occupational successfulness;
— zones 1, 2 and 3, respectively.

Some 75% of the evaluations of the group A persons tested are located in zones 2 and 3.

$$(\bar{I}_i \pm 2\sigma_i, CV_i \pm 2\sigma_{CV})$$

$$(\bar{I}_i \pm 3\sigma_i, CV_i \pm 3\sigma_{CV}).$$

This distribution is obviously not random. It reflects the fact that as a whole the psychophysiological indicators among operators with high and average success in work are higher and more stable than among operators with low expert evaluations.

It is not hard to see that within the limits of zones 1-3, with respect to the correlation of I_i and CV_i varying gradations in the integrated evaluations of the levels of suitability (low unstable, high unstable, etc.) can be singled out.

It is characteristic that 62% of the integrated evaluations of operators with high occupational success are located in a sub-area;

$$(I_i - \sigma_i, \bar{CV}_i - \sigma_{CV})$$

i.e., they are higher and more stable in the entire group of those tested.

Therefore, the method proposed, taking into consideration both the degree of deviation from the average individual values of a number of physiological functions and the range of their variability, makes it possible to give a graphic and differentiated presentation of the current level of occupational suitability of electric power plant operations personnel.

The methods known in the literature of evaluating the occupational suitability of persons in operator occupations are either insufficiently reliable [5, 6] or quite labor-intensive [1, 7], which limits the possibilities for their practical application.

In the works of the first group, the level of occupational suitability of the operations personnel of power units is connected with the degree of markedness of one or several individual psychophysiological qualities and properties: the strength of the nervous system [5], mobility, efficient thinking and attention [6].

However, using individual, even important physiological indicators as criteria for occupational selection does not take into consideration their differing significance in suitability for different types of work, nor the possibility of the partial compensation of some qualities for others. Therefore, this approach cannot ensure a sufficiently reliable prediction of occupational suitability.

The reliability of a prediction can be substantially increased when using methods of multivariate statistical analysis. For example, with the aid of the method of multiple correlations, mathematical expressions were obtained that related the work efficiency of operator-machine operators of power units to a set of psychophysiological, physiological and clinical indicators [1, 7]. Practical application of the mathematical models worked out is difficult, however, since it assumes preliminary calculation of the entire set of indicators included in these models. The process of obtaining new models of this type is also quite cumbersome.

The modification of the method that we proposed [4] is quite all-purpose, since it is applicable to any operator occupations and can include any aggregate of occupationally important qualities, regardless of the methods of determining them and the dimensionality. This makes it possible to recommend it for practical application by occupational selection laboratories, scientific organization of labor, educational training centers, etc.

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12151

Raising Mental Reliability of Power Plant Personnel

18220040b Kiev *ENERGETIKA I ELEKTRIFIKATSIYA* in Russian No 4, Oct-Dec 87 pp 51-53

[Article by V.I. Barabash, doctor of medical sciences, Leningrad Polytechnical Institute: "Ways of Increasing the Mental Reliability of Operations Personnel"]

[Text] Scientific-technical progress and intensification of labor lead to production concentration and a rise in the role of the person in control of technical systems. In 1984 the USSR Ministry of Power and Electrification held an All-Union conference on the psychological problems of a power engineering worker, at which a broad spectrum of research was outlined to raise the role of the human factor in power engineering.

The studies that we made on the basis of the Lenenergo LVS showed the particular urgency of formulating and introducing measures to ensure the mental reliability¹ of power system operations personnel. The need for this work stems from the high price of an operator's error, entailing an interruption in the provision of power for large industrial enterprises and regions, as well as from the specific nature of the work of the operators, who are called upon to perform actions entailing the possibility of being injured by the electric current.

In the course of the research, an ergonomic-occupation-graphic analysis was made of the work of 112 operators, and a study was made of their work conditions, the nature of the load, the level of personnel turnover, the markedness of the psychological adjustment to work and adherence to the technological requirements and the labor safety requirements.

The problem of the mental reliability of an operator was studied by using the method of correlating experts' conclusions and analyzing cases of accidents and injury over a period of thirty years. A structural study of the causes of accidents was made, using the method of analysis of critical incidents. The state of health and psychophysiological characteristics of LVS operations personnel was also studied.

Analysis of the causes of a reduction in operators' fitness for work established the special role of organizational-psychological causes, the psychological atmosphere in the collectives and the need for clear-cut interrelations between the executors and the directors and for restricted access of outsiders. All the operators note the high level of responsibility for the correctness of their actions and awareness of the danger to lives as the main burden in the process of their work. By the end of the work shift, regardless of the number of switch-setting operations, the operators experience a marked feeling of weariness. In the process of the occupation-graph studies, the conclusion was drawn that it was necessary to relate the work of power system operators to types of activity with a heightened level of mental load with all the resultant organizational and preventive demands. The high degree of responsibility for the correctness of action, the sense of worrying and exhausting anticipation at the stages of monitoring the system functioning and the high levels of mental tension (stress) in the process of performing the switch-setting operations drain one's resources and lead to serious forms of exhaustion. In the United States, this type of activity, entailing production stress, is included in the occupationally harmful group.

The tension of operators' work is also confirmed by data on the level of neurosis (number of nervous breakdowns and their markedness) among operators at electric substations. Nervous breakdowns are observed both among persons with a negligible length of service (30-35%) and among persons who have worked as operators for 10-15 and more years (45%). An analysis of the structure of the breakdowns showed their varying origin. Among young specialists with a length of service of 1-2 years, functional disorders predominate, connected with the burden in the period of adapting to the occupational activity, and among persons who have worked as operators for a long time, persistent organic disorders are noted.

The occupational suitability of the persons examined according to criteria of neuropsychiatric stability was studied by using the method of approximate diagnosis. The examination established individual signs of neuropsychiatric instability in 78% of the operators, and

markedly negative psychological indicators, according to the data from form and instrument studies, were revealed in 25% of those examined. A comparison of the data from the approximate diagnosis and the characteristics of the operators given by their supervisors coincided in 90% of the cases.

A study of the causes of the accident and injury rate in power systems, including that at the Lenenergo LVS, showed that in 90% of the cases the fault lies with the person who has committed incorrect actions or made ill-timed or erroneous decisions.

Disturbing the sequence of operations performed, failing to adhere to the labor safety requirements, work under abnormal and crisis situations and switching off the interlocks that make it impossible for the operator to perform prohibited actions emerge as the main causes of the accident and injury rate [1]. The risk factor, as a cause of the accident and injury rate, occupies, as has already been noted [2], a special place in electric power engineering.

Our studies made it possible to determine a number of directions related to ensuring the mental reliability of power system operators.

Raising the criteria of medical selection of operators and introducing occupational selection based on criteria that exclude persons who are neuropsychiatrically unstable from working as operators should be regarded as an early form of accident and injury prevention at power plants. There is experience in this type of selection [3] and it must be adapted and improved in consideration of the special occupational features of the work of power engineering operators.

The system of occupational training for personnel must ensure the formation of psychological adjustment to work under conditions of heightened stress, great responsibility and occupational alertness. (Adjustment is the readiness to perceive or act in a certain way in a certain situation).

Along with occupational knowledge, the trainees should receive information on the special psychophysiological features of their work, work hygiene and preventive measures for occupational illness. Specific knowledge of the psychology of work safety should occupy a special place in the training system both as a base and during training at the plants [4].

The enterprises should develop and implement a step-by-step ergonomic-psychological system of adapting young specialists to operator work, as well as a system of monitoring the work fitness (reliability) of the operator and his readiness to perform his duties according to the state of mental activity the minute he comes on duty. Systematic studies—mock emergency games, carried out according to the methodology of business games—must be organized with the operations personnel to work out

the necessary model studies of solutions and work through the actions in critical situations. They not only raise the level of knowledge, but also make it possible to activate a psychological adjustment to the nature of the actions in abnormal and crisis situations. Making known the accidents and injuries at the production facility and studying the entire set of causes contributing to and causing the accident, including the psychological reasons for the accident rate, form a basis for preventive measures [5]. A number of ergonomic-psychological features should be taken into consideration in organizing the work of power system operators.

The operators' activities are, inherently, in two stages, differing through their extreme polarity. The first type of activity, entailing observation of the instruments that reflect the load and dynamics of the state of the power system, is characterized by monotony, tension, absence of stimulus, restricted mobility and, if working without an assistant, isolation (solitude). At this stage, against the background of weariness and monotonous sounds and signals, the operator may become drowsy. In this demobilized state, a signal for action can be incorrectly interpreted, or a decision (action) can be incorrect. G.T. Beregovoy and coauthors in the book "Bezopasnost kosmicheskikh poletov" [Safety in Space Flights],² points out that after sleep, even with a sharply sounding alarm signal, the crew is in a half-awake state for another 9-12 minutes and, consequently, erroneous actions are possible.

An operator's work in the period when he performs various types of switch-setting, especially if it is performed under abnormal and crisis circumstances, is opposite in nature. The beyond-the-limit (extraordinary) forms of mental stress developing in emotionally unstable persons lead to erroneous actions or late decisions.

All this dictates the need to make a dynamic analysis to determine the operator's fitness for work and, if it is reduced (increase in erroneous actions and late decisions), an analysis of the person's mental state is required to rule out illness or other causes of the loss of the operator's inherent level of fitness for work.

In the course of our research, a number of other psychological complexes requiring ergonomic-psychological measures were also noted. Among the main ones, the following phenomena may be singled out: automatic performance of actions, psychological demobilization, intensified cautiousness, suggestibility, etc.

The automatic performance of actions (stereotype of operations) built up in the course of prolonged work facilitates the work. In a number of cases, however (state of agitation, half-awake state, weariness), the operator analyzes a new situation superficially and the routine automatic actions can lead to gross errors. The stereotype action must particularly be reckoned with when there is a change in the structure of the control panel, and with other analogous changes.

The phenomenon of psychological demobilization is characterized by a loss of the level of occupational cautiousness formerly inherent in the person. Symptoms of psychological demobilization are observed at the end of a work shift, before a vacation, after many years break in work, and also among persons who have been working for a long time at a production facility and have adapted to the dangers and disturbances in the technological processes. Therefore, in the course of the instruction and training program, when the planned assignments are carried out, these symptoms should be taken into consideration and the necessary measures introduced to correct them. Creating a system of dynamic observation of the state of the operators' health over the course of many years is an important direction in the work of ensuring the reliability of their work. A comparison of the results of yearly observations makes possible timely detection of a person with weakened health, as well as with various forms of neurotic disorders of occupational origin, and organization of therapeutic-preventive measures, and if necessary, removal of these operators from highly responsible types of work.

The importance of combating personnel turnover must be emphasized. A frequent change in operations personnel leads to lowering the level of their training and losing experienced specialists who are skilled in working in specific situations. Personnel stabilization should be implemented through economic, psychological and educational measures. Along with this, in consideration of the mental changes in a person due to the effect of the nature of the work and age (torpid thinking, heightened emotionality, etc.), maximum age criteria should be established for highly responsible types of operations work. The human factor is the main and weakest link in man-machine systems. The experience of the last few years has shown that production accidents and injuries are observed where work on creating favorable conditions for the reliable work of the operators is forgotten or neglected. Active searches are presently being made to develop interlocking, shunting and other automation devices, directed toward increasing the reliability of the person in the system. The concept of unmanned systems, however, should be regarded as a figurative one, and man will always be the basic factor at a production facility. At enterprises where work is done to prevent accidents and injury, with the active utilization of the human factor, good results are achieved [6].

Today it is impossible to solve the problems of the mental reliability of an operator without devising organizational measures directed toward refusing permission to work to persons in certain mental states. Among the particular mental states, the most widespread are serious forms of fatigue, asthenic symptoms after transmitted (infectious, etc.) diseases, psychogenic forms of depression, affective reactions, etc. Without examining all the forms of particular mental states that reduce the reliability of a person in the system, note must be taken of the promising nature of work on restricting admittance to duty for persons in a state of postalcoholic asthenia

(using alcohol the night before coming on duty), as well as persons with symptoms of drug asthenia, caused by taking substances affecting mental activity (tranquilizers, stimulants, soporifics, a number of medications of the analgesic group, etc.).

Recognizing persons inclined to alcohol abuse and not admitting them to responsible work of an operations nature should be included in the structure of measures to ensure the mental reliability of operations personnel [7]. Alcohol control set up at automated enterprises should contribute to this.

Considering the fact that medicinal, and particularly narcotic substances lead to a reduced level of awareness and serious forms of fatigue, it is difficult to establish the fact of their use. Instruments similar to those used for doping control must be developed and put into practical use, along with the introduction of examinations. These instruments should be portable and ensure the detection of narcotic intoxication.

In the structure of the criteria for occupational selection, particular attention should be paid to detecting persons inclined to paroxysmal states, characterized by brief lapses of consciousness (from a few seconds to a few minutes). Paroxysmal disruptions of consciousness are brought on by the effects of monotonous stimuli and can have fatal consequences. Modern science has effective technical means (electroencephalographs) ensuring the detection of persons inclined to spontaneous work conditions, induced by a disruption of consciousness.

The solution to the problem of the "operations reliability of a person", therefore, expressed in his capacity for stable maintenance of the optimum parameters of fitness for work during the entire work time, is a complex problem, and social, ergonomic and medical-psychological knowledge should be used to solve it. The achievements of these sciences make it possible even today to produce practical results with respect to the protection (reliability) of man-machine systems. The attempts to give a quantitative (mathematical) estimation of safety measures that exist in the literature are indeterminate, and mainly theoretical in nature.

Footnotes

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FUELS

Search On to Expand Ukrainian Mineral, Fuel Base

18220049 Moscow RAZVEDKA I OKHRANA NEDR in Russian No 11, Nov 87 pp 20-25

[Article by N.M. Gavrilenko (Ukrgeologiya [Ukrainian Geology] GPO: "Improving Prospecting Operations to Expand Further the Mineral and Raw-Materials Base of the Ukraine")]

[Text] Before the Great October Socialist Revolution, the Ukraine produced about 25 million tons of coal, 0.63 million tons of iron ores and 270,000 tons of manganese ores. Over the years of Soviet power, a powerful raw-materials base for various types of minerals has been

created in the republic; over 8,000 fields have been discovered and entered into the equation, of which 4,000 are in operation. The most important minerals are petroleum, natural gas, bituminous coal and lignite, iron and manganese ores, mercury, rock salt and potash salt, raw materials for cement, kermazit and glass, a multitude and diversity of stone building materials and underground fresh, mineral and thermal waters.

Some 74 percent of nationwide reserves ($A+B+C_1$) of manganese ore and 31 percent of iron ore, along with 28 percent of bituminous coal and 31 percent of coking coal, are concentrated in the republic. A leading role belongs to the known reserves of mercury, kaolin, graphite, fireproof raw materials, titanium and sulfur. Oil and natural gas have great significance in the economy of the republic. The oldest oil-producing region in the Ukraine is the Carpathian trough. The boundaries of this region have now been markedly expanded and also encompass the fold regions of the Carpathian and Transcarpathian trough. In the postwar years, thanks to the efforts of the explorers, the Dnieper-Donetsk depression became a most important oil- and gas-producing region. It currently numbers some 142 oil and gas fields. A number of fields have also been discovered within the boundaries of the Black Sea-Crimean Oil and Gas Province, including on the Black Sea and Azov shelves. Notwithstanding the comparatively small proportion of the oil and gas reserves in the Ukraine in the overall equation of the country, their exploitation is of interest since it is conducted in the regions closest to the consumer.

Deep horizons have been studied intensively in recent years. The complete conversion of seismic survey operations to the efficient OGT technique with enhanced frequency, the incorporation of apparatus with digital recording of field measurements and an increase in the capacity of computer centers has made it possible to resolve the task of preparing deep structures. A considerable quantity of wells is being drilled at depths over 5 and even 6 km [kilometers].

The principal coal reserves—from lignite to anthracite and including coking coal—are concentrated in the Donetsk and Lvov-Volyn coal and Dnepropetrovsk lignite basins. The boundaries of the oldest coal-producing region in the country—the Donbass—have been expanded considerably in the postwar years. New coal-bearing regions—the West and the South Donbass—are being assimilated successfully aside from the commercial portion of the basin known earlier.

The prepared geological base not only makes it possible to maintain the level of coal production that has been reached, but to expand it considerably as well when needed. The commercial coal regions of the North Donbass in Voroshilovgrad Oblast with forecast coals reserves of more than 10 billion tons and Lozovskiy Rayon in the West Donbass with reserves of over 8

billion tons, as well as other regions of Donetsk Oblast, that have been discovered in the postwar years have especially great prospects for increasing power raw materials.

Ferrous metallurgy has been highly developed. Some 36 fields are currently in operation providing 46.3 percent of nationwide iron-ore production. The largest iron-ore fields are concentrated in the Krivoy Rog basin and the Belozersk and Kremenchug iron-ore regions. A reserve raw-materials base for the construction of new mining enterprises in reserves of lightly enriched ores of the Azov fields has been created where concentrates suitable for use in high-quality metallurgy are obtained.

The prospecting of magnetic quartzite in the fields of existing mines which was earlier not extracted for commercial development is being conducted today. There are about 1.4 billion tons of confirmed reserves of lightly enriched magnetic quartzite in the fields of the Mines imeni Lenin, Dzerzhinskiy, Lyuksemburg and 20th Party Congress. A raw-materials base has been created for the ore-enrichment combine to refine oxidized ores (KGOKOR) being built with the participation of the CEMA member countries. Reserves of rock overburden for building ballast have been discovered and confirmed in the Kremenchug iron-ore region, which raises the comprehensive nature of the utilization of the fields and improves the geological and ecological situation.

The major Nikopol Basin and the Bolshoy-Tokmak Manganese Ore Field are located on the territory of the republic. The reserves of the northern portion of the Bolshoy-Tokmak Field, the base of the new Tavriysk GOK [Mining and Enrichment Combine], have been surveyed and confirmed. The annual production of manganese ore comprises 77 percent of the nationwide total. A firm basis for mined chemical raw materials has been created. The Carpathian Sulfur Field was discovered in the postwar years. Assimilation of the method of underground production of sulfur posed new tasks to geologists in surveying deep accumulations. This problem has been resolved successfully. Over the years of the 11th Five-Year Plan, geological results were obtained that made it possible to speak of the real possibility of creating an intrinsic raw-material base for the production of phosphorus mineral fertilizers. Reserves of apatite across the complex apatite-ilmenite field were confirmed for the first time in 1981, and complex apatite ores are being surveyed in Zaporozhye Oblast in the Novopoltava Field.

There is a potassium-bearing basin in the Carpathian region made up of scarce sulfate varieties of potash salt. Major reserves of rock salt and non-ore raw materials for ferrous metallurgy have also been discovered. The survey of the Belyayevka Field of high-grade ceramic kaolin has been completed in Dnepropetrovsk Oblast. The Zavalye Graphite Field has been surveyed. Reserves of fluxing limestone for the converter method of steel production have been confirmed. The large October

Field of high-stratum fire-resistant clay has been explored in Donetsk Oblast, which has made it possible almost to double the reserves of this scarce raw material for the metallurgical and ceramics industries of the Donbass. The raw-material base of limestone for the sugar industry has been reinforced. The fields that have been discovered provide raw materials for the existing mining enterprises.

Over 3,000 fields of building materials—cement, glass and ceramic raw materials, construction and wall stone, perlite, brick and kermazit raw materials, building sand and unique decorative and finish materials—have been given to the national economy. Aside from the traditional types of mineral raw materials, the storehouse of the republic has of late been replenished with completely new types of minerals—saponite and zeolite. The survey of a major field of clinoptilolite is being completed.

Considerable reserves of underground fresh water, playing a material role in industrial and domestic drinking-water supply, have been explored. The Ukraine is rich in medicinal and table mineral waters of various types. The mineral waters of the Carpathian resorts of Morshin and Truskavets and the resorts of Zakarpatiya and Mirgorod in Poltava Oblast along with the regenerative waters of various regions of the Ukrainian shield enjoy nationwide fame.

The Sevukrgeologiya [North Ukraine Geology] PGO has made a significant contribution to creating the minerals and raw-material base of the republic. The collective of the association was the first in the Ukraine to assimilate a new and highly productive method of drilling with hydraulic conveying of the core, which considerably expanded the scope of its application. A whole set of measures to raise the serviceability of diamond crown bits via electrochemical and cryogenic handling has been incorporated, and the manufacture of smooth-bore drill pipe strings has been assimilated. These and a series of other technical measures and the constant quest for and incorporation of the new has given the collective the opportunity of achieving the fastest drilling speed of the geological organizations of the UkSSR—1,058 shaft meters per month. Today the Sevukrgeologiya Association is a powerful geologic-survey organization equipped with modern technology and apparatus and made up of experienced and highly qualified specialists carrying out the comprehensive research of the northwestern and central parts of the Ukraine. The collective of the association was awarded the Order of Lenin for the successful resolution of tasks in the development of the minerals and raw-material base.

The collective of the Poltavneftegazgeologiya [Poltava Oil and Gas Geology] Association has made a large contribution to the study of the oil and gas resources of the eastern regions of the republic. The association has discovered 91 fields of oil and gas of the 142 that have been discovered in the Dnieper-Donetsk depression, including the Shebelin, Glinsk-Rozbyshev, Oposhnya,

Raspashnov, Berezovo and others. Major gas-producing regions have been created as a result—the Shebelin, the Zapadno-Krestishcheno-Yefremov and the Abaza-Sementsovo—as well as oil-producing ones—the Glinsk-Rozbyshev and the Rybalsk-Kachanovo. The more than 8,000-strong collective of the Poltavneftegazgeologiya Association is one of the largest oil and gas geologic-survey organizations in the country, including eight expeditions in its makeup, and it accomplishes exploration and survey work in the central and southeastern parts of the Dnieper-Donetsk depression. The collective of the association has been awarded the Order of the Red Banner for its success in surveying oil and gas fields.

The honored UkSSR geologist V.I. Myasnikov, UkSSR State Prize Laureate, Knight of the Order of Lenin and chief geologist of the Poltavneftegazgeologiya Association, has played a significant role in the study of the oil and gas resources of the Dnieper-Donetsk depression. A series of major oil and gas fields was discovered with his immediate and active participation: the Glinsk-Rozbyshev, Rybalsk, Mashevka, Kotelva, Berezovo, Yablunovka and others. He was one of the initiators of the assimilation of the deep accumulations with which the basic prospects for the further increase of reserves is associated today.

Research in the realm of flotation theory and the enrichment of finely dispersed materials that has obtained recognition in the USSR and abroad has been done in the laboratory for precious-metals ore enrichment of IMR [Institute of Mineral Resources] headed by S.A. Tikhonov. A practically waste-free technology for the enrichment of multiple-component high-carbonate apatite and apatite-precious metals ores with comprehensive extraction of all minerals for commercial production has been developed there. The technology considerably surpasses the level of foreign developments and has been used to enrich the ores of the Novopoltava and a number of other fields whose assimilation is expanding the raw-material base for mineral fertilizers, ferrous metallurgy and building materials.

USSR State Prize Laureate and drilling foreman of the Gorlovka Geologic Survey Expedition I.F. Miroshnichenko has made a large contribution to the survey of deep horizons in the coal fields of the central Donbass, and he was one of the first to master the new SKB-8 drill rig.

At the same time, under conditions of a relatively high degree of study of the resources of the earth, increases in the depth and complexity of exploration and survey of mineral fields, negative trends expressed first and foremost in a sharp rise in the cost of operations and a decline in their economic efficiency have come to be manifested more and more distinctly. Among the unfavorable factors in the exploration and survey of oil and gas fields are the small dimensions of the fields and the localization of accumulations in non-traditional conditions and traps. In the execution of operations with ore

and non-ore minerals, the principal formations of exploration and survey are deep-running fields whose forecasting and detection is associated with great difficulties. The discovery and surveying of fields in the crystalline basement of the Ukrainian shield and its slopes, covered with sedimentary deposits, presents particular difficulty.

A dedicated comprehensive program called "Exploration and Survey" is being realized to raise the efficiency of geologic-survey operations for oil and gas, and work is being done for the zonal and local forecasting of oil and gas content. The zonal forecasting provides for the selection and high-quality evaluation of the most promising sectors and zones, as well as reference material for local forecasting. The zonal forecasting of the basic oil- and gas-bearing complexes of the lower Carboniferous has been 30-percent completed on the territory of the Dnieper-Donetsk depression. The automation of operations in zonal forecasting based on new-generation computers is envisaged beginning in 1988. Local forecasting is accomplished for all areas prepared for deep drilling.

A series of geological and geophysical work is being done for the purpose of raising the quality of preparation of the non-anticline structures in the Voloshka and Machekhi fields: terrigenous rock for the former and carbonate for the latter. Detailed seismic research is widely employed at the field survey stage to study the structure of the oil-bearing strata. The creation of new geological models of the structure of fields and the employment of optimal methods for studying the parameters of oil and gas accumulations have accelerated the completion of the survey of the Andreyashevo Field by 2.5 years. The drilling of two wells 4,500 meters deep that cost over 3 million rubles was economized as a result. A new model for the Novonikolayevka-Rudensk Zone has been developed that will make it possible to expand its potential reserves by two or three times.

Geological organizations have today converted completely to highly precise aeromagnetic and ground gravimetric survey using modern proton and quantum magnetometers. The charge method of studying the borehole area and tracing ore bodies is being actively incorporated. The compilation of geological and geophysical models of the Krivoy Rog, Beregovo, Perzhan and Sura ore regions will be completed in 1988. Especial attention is being devoted to improving geochemical methods of exploration apropos of the conditions of closed regions using K GK-type devices. The volume of geochemical operations will grow by 1.7 times in the 12th Five-Year Plan. A fundamentally new type of geologic-survey operation—geodynamic forecast mapping within the boundaries of the Krivoy Rog geodynamic field—is being incorporated beginning in 1987. Volumetric modeling and elaboration of the history of geological development of ore regions from new points of view will make it possible to reconsider traditional approaches and devise new exploratory concepts.

The January (1987) Plenum of the CPSU Central Committee posed the task of actively incorporating new democratic forms into operational economic activity. This is first and foremost providing labor collectives, through the soviets, and general meetings with broad authority on all issues of business activity and social and personnel policy. There is some experience in elections in the sector. Some 51 managers were elected over the last period. They were principally the chiefs of party detachments and shops and foremen. S.N. Zaslavskiy was elected chief of the Trudovskiy GRE [geologic-survey expedition] at a general meeting. It is essential to summarize existing experience and devise a definite system for the holding of elections and to incorporate it universally.

Financing for the ultimate geological results according to stable standards of maximum cost per unit of geological assignment is fundamentally new in economic restructuring. All echelons of the associations are operating on full economic accountability [*khozrashchet*] that envisages a collective vested interest in the ultimate results of labor and a regard for the actual contribution of each worker. The planning of business activity is done based on an estimate of costs and expenses. All collectives bear mutual responsibility for the fulfillment of business contracts. Wages for workers and scientific, technical, production and social development are accomplished only through funds earned. The economically accountable collectives have a vested interest in reducing expenditures for operations and striving for growth in labor productivity, since gross income rises thereby and, consequently, so does the wage fund. This improves economic thinking in labor collectives.

During the preparatory period for the transition to the new business conditions, reserves of fuels and material assets beyond standard levels were eliminated for the first time, and requests for the acquisition of low-productivity and high-cost equipment were reduced. Some 23 percent more functionally outmoded and physically worn equipment was written off than last year. The amalgamation of 35 parties and 150 detachments and groups is envisaged by way of improving the structure of management. The norms for workings have been raised an average of 15 percent.

A program of social development for the five-year plan has been developed. The devising of prospects for the development of the sector to the year 2000 is being completed. Plans for social development have been developed in every labor collective. The development of the in-house method of construction is key to the resolution of the problem of providing housing. The volume grew by 1.5 times last year compared to 1985. Increases in the volume of construction and installation work require the reinforcement of the intrinsic base of the construction industry. The introduction of 270,000 cubic meters of housing is planned for the current five-year plan. The realization of the program will make

it possible to improve the living conditions of 4,200 families and reduce the waiting list by a thousand people by the end of the five-year plan.

Over 400 mobile railcar-homes are produced annually to create the essential living conditions for the drilling teams in the sector, which almost completely satisfies the needs of the geologic-survey workers. The small homes, as a rule, are equipped with dryers, refrigerators and shower-baths. The output of mobile stations for washing work clothes has been arranged. The new and improved Komfort type of railcar-home is currently being assimilated. The output of 10 experimental prototypes is planned for this year. The task has been posed of reconstructing all existing production accommodations, formulating the interiors in accordance with the requirements of aesthetics and employing modern materials and recommended color shades therein by the end of the five-year plan.

Serious attention is being devoted to the development of a network of health institutions. With a standard requirement for 2,300 beds in pensions and at rest centers, there actually exist about 2,500. Many bases, however, function for a period of 3 months and are inadequately furnished. Work is thus constantly being done on the expansion and amenities of rest places. A pension has been built in Nikolayevka with 300 places, and the Geolog pension in Gurzuf is projected for reconstruction with an increase to 500 places.

In order to resolve the difficult and crucial tasks arising from the resolutions of the 27th CPSU Congress, including to raise the efficiency and quality of the preparation of known mineral reserves for assimilation, it is essential to implement radical steps to intensify geologic-survey production in the 12th Five-Year Plan. Particular attention should be devoted to issues of improving the scientific forecasting of exploration and raising the quality of preparation of formations using geophysical methods along with the role of scientific research, both applied and basic. Paramount significance herein is assigned to accelerating the incorporation of the achievements of science and technology, along with progressive experience, into production. The projected measures are envisaged to be accomplished principally through the realization of comprehensive scientific and technical programs.

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ENERGOKOMPLEKS Program, Ukrainian Coal Industry Update

18220041 Kiev UGOL UKRAINY in Russian No 12, Dec 87 pp 18-19

[Article by V.M. Shamayev, engineer, and V.D. Kharchenko, candidate of economics, both of the USSR Ministry of the Coal Industry Central Office for Scientific and Technical Information in Donugi: "The Energokompleks Program and Retooling the Ukraine's Coal Industry"]

[Text] The mines of the Ukraine, and particularly those in the Donbass area, are the oldest in the country. Thirty two percent of them have been operating for more than 45 years, including 17 percent that were operating before the revolution. Replacing these mines has been a slow process because of cutbacks in investment in construction of new enterprises. In the last 15 years, only 40 percent of the capacities replacement agenda has been met, while the ninth and tenth Five-Year Plans have seen the creation of capacities 20.4 million tons below the level set in the Plan.

Because of the severe shortage of funds for new construction, retooling and modernizing enterprises are the only ways to keep growth rates at the requisite level, encourage improvements in technical and economic performance indicators, and mobilize the human factor. Both are now part of the republic's Energokompleks program, which was created during the 11th Five-Year Plan. The projects that are part of the program for the 12th Five-Year Plan are an important element of the overall plan for technical development. Among the objectives they comprehend are: securing more of the sophisticated equipment and advanced technology developed during the 11th Five-Year Plan; creating new equipment and techniques for extracting coal and mechanizing support activities; and ensuring that all miners work in accepted safe working conditions.

By working to implement the program, the industry was able to improve its technical posture. Between 1981 and 1987, 56 vertical shafts were sunk, 235 work rooms were created, 61 wide vertical shafts were sunk, 188 primary ventilation and 36 degassing installations began operating, and 30 surface production complexes were built.

The effort to retool cleaning, shaft sinking, and support operations is covered by nine sub-programs in the coal industry section of the Energokompleks program and has been the source of major changes. These include 77 projects, 55 of which have the development of new equipment as their objective, and 22 of which are aimed at advanced technology. In the 12th Five-Year Plan, it should be possible to complete development of 29 new pieces of machinery and 13 advanced equipment and technology designs.

For 1986-87, the first sub-program, whose objective is to make narrow gently sloping seam mining operations more efficient, prescribes introducing 268 advanced-technology mechanized cleaning units, including the 1KM-103, KD-80, and 1KM-88. In 1986, 24 1KM-103 units commenced operations at mines (the Plan required 15) and eight KMT units went on line (the Plan stipulated five.) This led to a significant jump in the indicators of technical and economic performance. For the year, the total amount of coal extracted from integrated mechanized mine faces grew by 4.6 million tons, while the average daily yield per face went up by 20 tons.

Some collectives, by dint of having mastered the new machinery, performed at an exceptionally high level. For example, in May of 1987 N.N. Komarenko's team at the Abakumov mine (Donetskugol Association) used a 1KM-103 unit to obtain daily yields of 1,190 tons per wall, while GROZ (not further identified) productivity was 12.1 tons, about twice the industry average. In June of 1987, A.P. Rozov's team at the Samarskaya mine (Pavlogradugol) used a KD-80 unit to extract 1,929 tons per day, with a productivity of 18.2 tons of finished product per day. And in May of 1987, A.Ya. Kolesnikov's team at the Molodogvardeyskaya mine (Krasnodonugol) used a KMT unit to obtain figures of 2,762 tons and 39.5 tons in these two categories.

The same sub-program contains plans to increase the number of continuous mining machines in use, thereby ensuring a greater supply of high-grade fuel. The 12th Five-Year Plan also includes provisions for acquiring 40 US-3 high power-to-weight ratio machines with combined scraper, ram, and continuous mining machine capability. The purpose of the machines would be to extract coal from extremely narrow (0.4-0.8 m) seams. Completing the projects that are part of the first sub-program will result in a six million ton increase in coal yields from integrated mechanized stopes at gently sloping seams, 3,500 person decrease in manpower, and savings of 31 million rubles from the drop in the production cost of coal.

The second sub-program will create and acquire equipment for mechanizing stopes at narrow steep seams and where the mining conditions are difficult from a mining and geological point of view. Nineteen KGU units will be secured, as will 73 2ANShch units, and 35 Poisk-2 narrow-cut mining units. By 1990, mass production of the Poisk-3 narrow-cut unit will have begun. In 1986, acquisitions included four KGU units, 11 2ANShch control units, and 10 Poisk-2 narrow-cut mining units, all of which have performed well at numerous mines. At the Kochegarka mine (Artemugol), a 1ANShch unit has been used to handle a daily load of 236 tons per face, with a productivity of 6.1 tons of finished product per stope. At the Mine imeni K. Marx (Ordzhonikidzeugol), the same unit produced figures of 300 and 6.9 tons for the above categories. At the Zolotoye mine (Pervomayskugol), a Poisk-2 unit handles a load of 220-260 tons per face per day, with an output productivity of 5.7-6.1 tons, or twice the level of faces worked with jack hammers.

Using new equipment on steep seams will result in a 26 percent increase in the coal yields at integrated mechanized stopes, a 1,400 person reduction in manpower, and savings of seven million rubles from the drop in the production cost of coal.

The third sub-program will increase the degree to which extant and new techniques of and equipment for coal preparation are used. Plans call for securing the following machinery, which was developed during the 11th Five-Year Plan, by 1990: 4PP-5 shaft sinking sets;

Soyuz-19 units; KRT's; KN-78 cutting units; MPK-3 rock loading machines with side unloading; and B-68K drilling jigs. Following this agenda will enable the industry to bring the percentage of preparation operations performed by machines up to 38.8 percent, compared to 32.8 percent in 1985, while the percentage of mechanized rock loading operations will go from 82.1 percent to 89.6 percent from 82.1 percent. The amount of a section that can be processed will rise by ten percent, nearly 1,500 fewer persons will be needed to man the work force, and savings from the drop in coal production cost will exceed 15 million rubles.

Since 1986, coal machinery building plants have been mass producing 4PP-5 units, B-68K drilling jigs, KN-78 cutting machines, and MPK-3 loading machines. The availability of the above machines, which started being used by mines in 1987, is limited.

The B-68K drilling jig has performed well in directional shaft sinking operations at steep seams. At the Mine imeni N. Izotov (Artemugol), the jig sank 450 meters of shaft in five months and, with the help of MRS machines, prepared three faces. Directional drilling was accomplished with a high degree of precision (within five percent.) And the productivity per drill operator was 1.5 times higher than at sites where the BSh-2m drilling jig is used.

The availability of mining machinery for mining operations, particularly in areas of hard rock, has resulted from efforts of the Institute of Hard Materials, the Physical and Mechanical Institute, the USSR Academy of Sciences Institute imeni Platon of Electric Welding, and others to develop high-durability cutting tools for mining. In 1986, they produced a trial run (48 pieces) of the tools for the SK-1u shaft sinking unit. Other developments include: RTB [jet turbo-drilling] rotary bits (18 pieces) for jet turbo-drilling units; rotary bits for L-4 (119 pieces) and L-35 (132 pieces) rotary drilling gear; and rotary bits for the Strela-77 drilling unit (300 pieces.) Work is also underway to develop new cutters with diamond and hard alloy tips for rotary drilling.

The issue of mechanizing manually performed operations at primary and support phases of the production process is still an urgent one. The fourth sub-program includes plans to build remote control suspended hoisting apparatus, suspended monorails and surface arteries for transporting personnel and cargo, and access roads that will facilitate delivery of powered support sections. By using these and other mechanization resources at enterprises that are part of the coal industry, it will be possible to double the rate at which manually performed operations are being cut and reduce manpower needs by 42,000 persons.

The fifth sub-program includes plans to use new equipment for and techniques of coal preparation and improve the quality of coal. Over the Five-Year Plan,

approximately 60 recently developed machines of various types will commence operations in the Ukraine; these include 15 flotation and 20 jiggling machines and 19 vacuum filters. The new machinery will make it possible to cut the amount of coal discarded with tailings by 300,000 tons, save almost 8 million rubles, and cut manpower needs by 1,000 persons. In 1986 and the first semester of 1987, 12 OM-12/3 and OM-24 jiggling machines and five vacuum filters were installed. By using such up-to-date techniques and anthracite preparation methods, the Sverdlovskaya TsOF [Central preparation factory] has been able to produce and ship specialized fine grades of concentrate for power production and ore agglomeration purposes. In addition, the factory received a return of 161,300 rubles and cut the amount of coal lost in tailings by 20,900 tons.

The sixth and seventh sub-programs involve developing and implementing ways to make mining operations safer. Included are equipment and instruments for forecasting and preventing sudden outbursts, means of monitoring methane and coal gas concentrations and preventing explosions, and special installations for keeping the temperature at stopes normal. In 1986, the Mine imeni Batov, the Mine imeni Bazhanov (Makeyevugol), the Mine imeni the Newspaper SOTSIALISTICHESKIY DONBASS, and the Mine imeni the Newspaper ZAPREVALNAYA conducted tests to certify five pilot models of explosion hazard detection devices. The devices passed and were recommended for mass production, and in 1987 a trial series (12 pieces) will be produced at the Izmeritel Plant in Chernovitsk. The Kazankompressor-mash NPO [scientific production association] has commenced mass production of the 2TKhMV-2000-2 stationary mine refrigerating machine, which is rated at 2,000 kcal/hr; the first model will be installed at the Mine imeni the 9th Five-Year Plan (Sovetskugol.)

Efforts to develop inhibitors based on the waste and by-products of various chemical factories have made significant progress. Such inhibitors would be used both for blast suppression and as the stemming for blasting operations. The utility of inhibitors employed as a plastic tamping barrier was confirmed when they were approved at the Mine imeni Frunze (Rovenkianratsit.)

The ninth sub-program involves an effort to develop non-traditional ways of extracting coal, including stopes that do not need to be constantly manned. Plans for 1987 also include testing the impact of vibration pulses on rock formations under industrial conditions, writing the design documentation for an underground coal gasification technology proving ground, and laying out the key specifications for a facility at which the hydro-impulse technique of coal extraction would be researched.

The Elektrokomples program and other projects have made it possible to keep the coal industry of the republic on an even course and improve the indicators of technical and economic performance. Nonetheless, the results would have been better if new hardware had been used at the level planned for.

If we complete the projects that are part of the Energo-komples program and implement them at production facilities, we will be able to realize savings of 90 million rubles from the drop in production cost and cut manpower requirements by 10,000 personnel in the 12th Five-Year Plan. And if those parts of the technical expansion effort that are prerequisites to completing the entire project are taken into consideration, the savings from the decline in production cost will be 240 million rubles, while manpower requirements will drop by 28,000 persons.

To ensure the decisions of the 27th CPSU congress and other plenums are implemented, producers must make better use of the mining machinery they have, gearing it toward maximum return, and accelerate the process of developing new machinery comparable to the accepted world standard and capable of superior productivity.

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ELECTRIC POWER GENERATION

Public Raises Questions Regarding Ignalina AES
18220037 Vilnius SOVETSKAYA LITVA in Russian
24 Dec 87 p 2

[Article by Yu. Vilemas, doctor of technical sciences and director of the Lithuanian SSR Academy of Sciences Institute of Power Physics and Technology Problems: "Is Atomic Energy Clean?"; first two paragraphs are introduction]

[Text] A lot of our letters to the editor have come from SOVETSKAYA LITVA readers who are worried about what will happen to Ignalina Kray and its many lakes as a result of AES operations in the area. Typical questions are: "Isn't there danger involved in increasing the capacities of the Ignalina AES," "How will a nearby AES affect the health of people and the environment," and "What is the guarantee that our republic won't have to face its own Chernobyl?" The questions also take on a more pointed form from time to time: "Do we need nuclear energy at all if the potential for tragedies like Chernobyl can't be eliminated?"

The editors have asked Yu. Vilemas to help answer these questions and discuss the effect of nuclear power production facilities on the environment. Vilemas, a doctor of technical sciences, is deputy chairman of the Atomic Energy Commission of the Lithuanian SSR Academy of Sciences Presidium.

Issues of power production (and nuclear power production in particular) are the focus of public attention around the world. Among the factors that have made so many people from all walks of life interested in (but not always enthusiastic about) the growth of nuclear power

are the infamous gasoline "crisis" of the early 70's, the growing extent to which thermal power plants and automobiles are polluting the air, the dramatic growth of nuclear energy over the last 20 years, and major accidents at nuclear power plants at Three Mile Island in 1978 and at Chernobyl in 1986. The Chernobyl accident has been a major contributor to the public's negative attitude toward nuclear power, since before it took place there had never been even a single radiation-related fatality at any AES in the world. This had made exponents of nuclear power very optimistic and provided them with proof for their argument that nuclear energy was the best source of clean, non-polluting, and safe power. At present, however, there are many uncompromising and valid objections to this thesis, with the Chernobyl disaster serving as the most potent argument against nuclear energy.

Issues of nuclear power safety are of great importance for our republic, since there are two major power reactors now operating there, and another is under construction. Unfortunately, the serious shortage of information on the various aspects of developing nuclear power creates completely untrue and even ludicrous rumors about radioactive contamination, bans on AES construction in other countries, and so forth. Of course the opposite argument, which is that AES's are 100 percent safe for the environment, is also absurd. Nonetheless, it is critical that we provide truthful information on the real situation, the potential hazard, and the ways of preventing accidents (or, to be more precise, ways of keeping the risk at an acceptable level and minimizing the threat to the environment) and provide it in a form that everyone can understand. Being open about such issues and making sure complete information about nuclear power is available are the only realistic way to fight prejudice against something that is both needed and useful. And such openness must not balk at discussion of the status and direction of nuclear power or the possibility of an accident involving releases of radiation. Since nuclear power is already a part of the Lithuanian reality, it is incumbent on everyone involved in the scientific and technical aspects of the nuclear industry to help with the effort to provide regular education on nuclear power. The Atomic Energy Commission of the Lithuanian SSR Academy of Sciences Presidium is planning to expand this educational effort in the near future.

No discussion of how well informed the public is can avoid noting that too little readily understandable, authoritative information on the extent to which the Chernobyl accident affected the radiation level in Lithuania is available. At the same time, the Academy of Sciences, Goskomgidromet [state committee for hydro-meteorology], and Lithuanian Ministry of Health all have abundant accurate data on the subject. We know, for example, that the impact of the accident was considerable in the first few weeks after the accident, declined for a certain period of time, and that after a few months soil, plant, and atmospheric radiation readings were

barely higher than natural levels. And the total additional dosage received by the individual Lithuanian does not represent a danger to anyone in any part of the republic.

Sweden, Denmark, and other neighboring countries that were in the path of the radioactive dust from Chernobyl reacted angrily to the accident at first, but are now involved in objectively evaluating the damage. In Denmark and England it has been determined, for example, that the 1986 accident increased the integral annual radiation dosage the average citizen of those countries receives from all sources (primarily natural ones) by the same amount as a two-hour plane flight, and by significantly less than the amount of a single X-ray.

For the citizens of Lithuania, the radiation dosage received was equivalent to the completely safe dose received by tourists in mountain areas, where the natural level of radiation is slightly higher than at sea level. In fact, the difference in the dosage of natural background radiation received by people living on the first and people living on the upper floors of various kinds of buildings is greater than the additional dosage from Chernobyl. We are citing these comparisons in order to give the people of the republic a true idea of how much damage the Chernobyl accident caused without exaggerating the danger to them.

The following information should also help dispel prejudice against nuclear power. Despite the rapid growth of the nuclear industry around the world in recent years, the total amount of radioactive emission into the environment from nuclear fuel processing facilities and AES's is not only not growing, but is declining. This is due largely to regular improvements in nuclear facility reliability and quality. Total emissions from all the nuclear power related facilities in the world combined resulted in an increase in environmental radioactivity of only one tenth of one percent, yet there are more than 400 major power reactors currently in operation, with total capacities of over 300 million kilowatts and a nearly 16 percent share of all power produced.

AES's in the USSR produce only about 10 percent of its power, while in the 10 most industrialized countries over 30 percent of power comes from nuclear power, and in France, Belgium, and Sweden the figure is over 50 percent. Thus, Sweden has capacities of 1.15 KW per citizen. This ratio will be the same in Lithuania when the Ignalina AES reaches its capacity of four million KW.

Since the topic of the current situation at the Ignalina AES has come up, it seems appropriate to mention that we must balance the potential danger and environmental impact of radioactive fallout from the AES against the fact that the Chernobyl disaster was a singular and untoward incident. We now know the reasons for the unfortunate accident, and are thus aware of what measures will prevent a repetition in the future. By implementing new procedures at the Ignalina reactors that are

already on-line, upgrading them in the course of operations, and modernizing the design of the third power unit, we have been able to ensure the safety and reliability of the AES and cut the chance that there will be a dangerous radiation-releasing accident.

The first years of operations at the Ignalina AES have shown that it has not significantly increased the radioactivity level, while new procedures will eliminate even that small amount. Radioactivity has a distinctive feature: that is, it is easy to detect and measure even in very small quantities. It is thus easy to identify radioactive emissions at considerable distances, which makes it simple to monitor them effectively. No incident of increased pollutant emission is permitted to go unnoticed! An awareness of this dictum keeps AES operational personnel highly disciplined and forces them to maintain constant control over the status and reliability of all systems.

The Lithuanian SSR Academy of Sciences and other organizations in the republic have drafted and are implementing a comprehensive program of research on the radiation and environmental situation around the Ignalina AES.

Long before construction began on the AES, an effort to research all the aspects of the natural environment that might be impacted by the station was begun. Ten years old at this point, the effort has been expanded since the AES went on line. For example, on the north shore of Lake Drushkyay, the Academy of Sciences has begun building a facility for ecological and hydrological research. The facility will be equipped with the instruments needed to obtain complete information on all aspects of AES impact on the environment, study observed phenomena, forecast the future developments, and provide the public with complete and objective information.

The findings from the recently completed studies have enabled researchers to change what they felt the maximum capacity of the Ignalina AES could be based on the water balance and cooling capacity of Lake Drushkyay. The revised figures demonstrate that the lake will not support AES operations at the originally projected capacity of six million KW. A decision has thus been made to reduce the projected capacity to 4.5 million KW and cancel the project to build the fourth unit. This reconfirms that the absolute safety of nuclear power facilities is always the paramount consideration.

While we may be a little late doing so, it is time to state that there is hardly any human activity in the area of technology that entails such considerable and often undesirable consequences for the environment as nuclear power. Yet the negative ecological impact of AES's is often much less pernicious, and the return much greater, than with most of the other forms of energy currently available.

There is no way to avoid dealing with this fact!

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PIPELINE CONSTRUCTION, OPERATION

Pipeline Operations in Yakutiya Described
18220048 Moscow GAZOVAYA PROMYSHLENNOST
in Russian No 12, 1987 pp 22-24

[Article by V.Ye. Bolonov, V.V. Korotkov, M.K. Cheremkin and I.P. Konstantinov (Yakutgazprom [Yakutiya Gas Industry], Permafrost Institute of the Siberian Branch of the USSR Academy of Sciences) under the rubric "Productive Experience": "Specific Features of Operating Gas Pipelines in Yakutiya"]

[Text] *Experience in operating trunk gas pipelines under the permafrost conditions of the ground of Yakutiya has shown that the choice of an optimal means of laying gas pipelines facilitates raising the longitudinal stability of their above-ground and underground stretches.*

Considerable experience has been accumulated in Yakutiya in the construction and operation of trunk gas pipelines. The total length of gas trunk lines operated by the Yakutgazprom PO [Production Association] exceeds 1,000 km [kilometers], the predominant diameter of the pipe is 530 mm [millimeters] and the working pressures are up to 7.5 MPa [megapascals].

The most difficult period of the year for operating gas pipelines is December to February, when the temperature of the ambient air drops below -50 degrees Celsius. Gas consumption increases by 2-3 times over this period, which leads to more intensive operation of the gas pipelines; the gas temperature drops, the temperature drop across the metal walls of the pipe increases and longitudinal compressive stresses develop along with volumetric-gradient stresses in the frozen ground.

The right-of-way of the principal Taas-Tumus-Yakutsk and Mastakh-Yakutsk gas pipelines run through various stretches of the central regions of Yakutiya where thick sections of permanently frozen ground (up to 500 m [meters]) are widespread. They traverse extensive forested areas, a multitude of swampy lowlands (*mari*), the valleys of small rivers, thaw sinkholes (*alasy*) and winnowing sands (*tukulany*).

Ice formations covered with loam topsoil of up to 3-5 m or representing interstratified sandy loam, small sand and sandy loam particles are typical of the watershed stretches of the right-of-way.

In the Choroon-Yuryakh-Lunkha interfluvium, the right-of-way of the Mastakh-Yakutsk gas pipeline runs across desert terrain with typical erosion excavations, ash ridges, hillocks and dunes.

The first Taas-Tumus-Yakutsk gas pipeline was built using various methods of pipelaying: aboveground on piles and surface supports, underground, surface covered with local or imported dirt, as well as surface in fill. Other gas pipelines have been laid basically underground in the seasonal thaw layer of the ground.

Two basic plans are accepted for aboveground laying—"coil" and straight-line with slightly curved sections. A device for fixed "anchor" supports (crib and clustered piles) is envisaged for the middle of zigzag-shaped sections, while so-called freely movable ones are planned for the rest.

The supports began to undergo deformation from the very first days of operational start-up on the Taas-Tumus-Yakutsk gas pipeline, which led to violations of its planned situation and forced the Yakutgazprom PO to do preventive repairs immediately to avoid emergency situations.

The pile supports are subjected to uneven buckling as a consequence of their insufficient penetration (only 3 m in all). The rocking A-shaped supports, although employed basically on non-submerged stretches, proved to be too unreliable and had to be almost completely replaced with sliding piling supports.

There are currently practically no stable supports, including "anchor" ones. The number of stretches that do not lie on supports, with increased spans and with large bends in both the vertical and the horizontal planes is too great. As gas pipeline operational experience has shown, the heating effect of the pipes on the frozen soil is inconsiderable, and thus during the last preventive repair (March-April 1986) the re-laying of gas pipeline from wooden supports onto ties of 20-24 cm [centimeters] in diameter and 6 m long was carried out. The distance from the bottom of the pipe to the ground surface (up to 1 m and more) envisaged by the plan was insufficiently substantiated. The principal types of deformation of the supports are tipping over, shifting, distortion of the crib, fracturing of the crossbars and rotting of the lower timbers of the crib, rollers and piling materials. The planned position of the gas pipeline on angular and compensating sections, where the greatest bending moments are in effect, has been completely violated.

Under conditions of a dry summer in Yakutiya, the danger of the appearance of forest fires is very great. This complicates the operation of the gas pipeline, since it is essential constantly to clear the cut of the rapidly restored forest vegetation, which is not always possible, especially when there are no reserve lines.

In our opinion, the construction of aboveground gas and oil pipelines in the taiga zone of Yakutiya should be limited. Only the crossings of water obstacles or especially complex stretches in a frozen-ground sense could be executed in an aboveground variant with reliable metallic supports and the appropriate compensators for temperature deformation.

The most marked violation of the longitudinal stability of the pipe is observed in lower areas of the terrain—*mari*, hollows, run-offs and *alasy*—where the surface laying of pipe is used with packing with the nearby soil.

The majority of the emergencies that arise on the gas pipelines of Yakutiya are on the *mari* stretches. This is brought about by the fact that the proper attention was not devoted in designing the gas pipeline to evaluating the scale of violations of the permafrost conditions and the rate and consequences of their development. As a rule, the design solutions for the laying of gas pipelines in the *mari* were adopted based on conditions observed before the beginning of construction. The physio-mechanical and thermophysical properties of the soil of the *mari* were so multivariied, complex and changeable that it was essential to take into account the conditions for the joint operation of gas pipelines and their foundations in the area of limiting the inevitable settlement and heaving and guaranteeing the essential strength and stability of the ground. For this it was necessary to elaborate a number of important issues associated with the formation of the stress-deformation situation in the footings under various influences from the gas pipeline.

Aboveground laying and aboveground crossings should have been employed on all *mari* sections, as well as on all crossings of rivers and streams. The operational experience of aboveground gas pipelines confirms the operational reliability of such sections. Operating expenses and spending on construction are considerably reduced thereby, the need for hydro-technical structures (flumes, reinforcement of riverbanks and the like) declines, the soil conditions are not violated and the flooding of the *mari* does not occur.

The Yakutgazprom Association has repeatedly appealed to the planners—Soyuzgazproyekt [All-Union Gas Planning Institute]—with such proposals, but the institute deflects them, referring to the Instructions for the Use of Steel Pipe in the Gas and Oil Industry. This is leading to the fact that the construction of gas pipelines is being carried out with violations of planning conditions that the institute consents to in turning over the gas pipeline for operation. The reliability of the serviceability of the gas pipeline during operating is reduced as a result.

As for the state of underground gas pipeline sections, the following must be noted: in places where the work was done according to plan and the essential depth of pipelaying was ensured, emergency situations have practically not arisen and the state of the gas pipelines is wholly satisfactory. According to data for the last geothermal inspections (1985-86), the maximum amount of thawing of the ground under the pipe on drainage sections does not exceed 1-1.3 m, i.e. there was no material change in the upper boundary of the permafrost ground.

During winter the ground around the pipe freezes on a considerable portion of the right-of-way as a consequence of the intensive heat exchange of the pipeline-atmosphere system, on the one hand, and the pipeline-ground system on the other. The year-round negative temperatures of the gas at the start point of the gas pipeline (-18 degrees Celsius) and the lack of compressor stations are incentive factors.

In recent years the most agitation for operational workers has been presented by the 30-km stretch of the underground Mastakh-Yakutsk gas pipeline that traverses sandy masses (*tukulany*). The sand is subject to intensive wind erosion, which causes blowing of the pipeline. The appearance of open spaces on the gas pipeline, not to mention crooked ones, testifies to the dangerous increase in deformations. The lack of temperature-deformation compensators, which are absolutely essential under the conditions of the desert terrain of Yakutiya, complicates the situation here.

As research conducted by the Permafrost Institute of the Siberian Branch of the USSR Academy of Sciences has shown, sandy soils not cemented by ice have a resistivity to shearing at the pipeline surface of just 0.003-0.004 MPa. At the same time, the shear strength of this same sand under conditions of its complete ice saturation is two orders of magnitude greater. These data testify to the very poor restraining capability of dry and free-flowing frozen soils, which along with the considerable amplitudes of their temperatures has evidently fostered the appearance of excessive longitudinal displacements of the Mastakh-Yakutsk gas pipeline.

Thermal-erosion washouts are the most widespread of the permafrost processes on the gas pipeline rights-of-way. They create difficulties in the movement of transport equipment along the rights-of-way, causing the necessity of doing preventive maintenance on the winter roads.

Analysis of the development of defects on the line sections of gas pipelines shows that about 50 percent of the failures comprise flaws and destruction of welds, especially circular ones, and pipe metal. They were noted principally in late fall and winter, which testifies to the high stresses on gas pipelines conditioned by the great temperature drops between the ambient temperature and the temperature of the gas being transported, as well as the effects of frozen soils with seasonal thawing, the migration of ice delineation, soil heaving etc.

According to operational data, there were no emergency situations on gas pipelines associated with corrosion. Some manifestations of systematic general wastage on the outer surfaces of the pipe can only be observed on sections with damaged insulation, and there are no internal traces of corrosion. The aboveground sections of the gas pipeline were covered with a special grease to which 5-percent aluminum powder was added. It was applied twice: in construction and after 10 years from the time of operational start-up of the pipeline. This coating has fully proven itself under the conditions of Yakutiya.

The underground stretches of gas pipelines are wound with gummed strips or are covered with an asphalt mastic with mineral fillers reinforced with a layer of brizol. The preservation of the insulation on straight sections is good, while it is unsatisfactory on open and angular ones.

According to SNiP [construction norm and regulation] 2.05-85, the electrochemical protection of underground and surface pipelines laid in regions with widespread permafrost is envisaged regardless of their corrosion activeness (Clause 10, 23). Our experience demonstrates the possibility of operating gas pipelines on the territory of Yakutiya (remote from populated areas) without electrochemical protective measures. The execution of comprehensive scientific-research operations to study the processes of soil corrosion and their effect on pipelines that are located in an environment with negative temperatures for the greater part of the year is essential for better substantiation.

Emergency situations on gas pipelines in Yakutiya are basically connected with the extreme meteorological conditions and permafrost factors. There are still no reliable methods, however, for a comprehensive evaluation of the stresses that arise in pipelines under the influence of various factors.

The Permafrost Institute of the Siberian Branch of the USSR Academy of Sciences has begun on-site and laboratory research to uncover the nature of the joint interaction of gas pipelines and permafrost ground. The sites of the research are gas pipelines that have newly been placed into service on sections with widespread winnowing sands and *mari*. Specialists of Yakutgazprom will also take part directly in the work. The results of the scientific research will be tested and incorporated on the gas pipelines of Yakutiya.

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LABOR

New Provisions for Pension Benefits Examined
18280032 Moscow SOTSIALISTICHESKIY TRUD in
Russian No 12, Dec 87 pp 77-87

[Article by M. Zakharov, doctor of juridical sciences (Scientific Research Institute of Soviet Legislation): "On Drafting the New Law on Pension Security for the Working People"]

[Text] Many materials are appearing in the pages of the press concerning the drafting of the new law on pension security for the working people and specific proposals by citizens on the given question are being published. There is broad discussion and various opinions are expressed. This is entirely understandable: after all, pension security affects the interests of all Soviet people. This is not only because pensioners comprise a substantial part of the nation's population (as we know, their number is nearing the 60 million mark; approximately one-fifth of the nation's population—one-fourth of the adult population—are pensioners). Millions of working people who are of middle age or pre-pension age are keenly interested in the future pension period of their life. Even younger people are not indifferent to the fate of their parents, grandfathers, and grandmothers. Everyone is obviously entirely aware that the pension reform will for many years to come determine the living standard of a continuously growing segment of the population that numbers in the many millions—pensioners and their families.

The basic goals of the reform are clearly formulated in the decision of the Politburo of the CPSU Central Committee. MDSU/1.MDNM/: to improve the living conditions of veterans and to stimulate their more active participation in social production. How can this be achieved? What kind of managerial decisions must be devised that would be responsive to the objective needs of developing society and that would preclude the miscalculations made in the past?

Today, at a time when the law is being drafted, the main task is to make an objective, thoroughly truthful and honest analysis of the state of the existing pension system, of the reasons that urgently dictate the need for the in-depth analysis of the presently functioning pension system, to elicit its weak points and adverse tendencies that have been clearly manifested in it, especially during the time when attention to the social sphere waned. M. S. Gorbachev noted in the report at the January (1987) Plenum of the CPSU Central Committee that the social orientation of the economy was clearly weaker in recent five-year plans and that a deaf ear was turned to social problems. MDSU/2.MDNM/ We believe that it should not be said, as the authors of certain publications do, that the weakening of the social

orientation of the economy did not affect pension security and that the theses enunciated by prominent economists that the status of pensioners compared with the working population and the lowering of their absolute living standard cannot be called true. MDSU/3.MDNM/

What factors generate the objective need for cardinal pension reform or, to put it another way, what motivated the decision to begin drafting the new law? The reasons are quite numerous, but among them are the main, basic reasons that necessitate pension reform to the greatest degree. In examining them, we must ignore a number of special questions, the solution of which will not alter the general state of affairs.

The first reason is the relative and absolute worsening of the plight of pensioners. Naturally not all of them but most of them. That is the crux of the problem. It is also important to emphasize something else: the functioning of the existing legal system leads to the further worsening of the plight of pensioners, while individual one-time corrections in recent years that have affected certain categories of pensioners, even though they were significant, did not curb adverse tendencies.

Let us first examine the question of the relative worsening of the pensioners' plight. The question is quite complex, but its essence can be expressed simply: the living standard of a person in the last years before he retires on pension and his living standard after he discontinues his labor activity and becomes a pensioner. In the given instance, earnings and the pension that is computed on the basis of these earnings, is used for the comparison. What was the situation earlier, for example in 1960, and what is it now 25 years later, if we compare the average earnings of blue- and white-collar workers in the corresponding years and the pension that is computed on the basis of these earnings? At that time the pension was more than 60 percent of earnings. Today it is about 45 percent of earnings. The obvious conclusion is that the pension now comprises a considerably smaller part of the earnings.

Average values are deceptive. One must use them cautiously and honestly. Average values occasionally conceal a cascade of different complex, occasionally contradictory situations. Let us therefore take the three most common categories of working people: those with low, average, and relatively pay. Has the relative level of their pension security changed? It has changed and changed significantly. This is not so difficult to see. It requires comparing the minimum, average and high earnings characteristic of past and present periods and the calculation of their pension according to established norms (in percent of earnings). The pensions of minimum earners were previously 85-100 percent of their earnings; the pensions of average earners were 2-2.5 times higher than the minimum—approximately 65 percent; the pensions of the high earners (are, let us assume, 2-3 times higher than the average)—50

And now? The pension of first of the indicated categories is a little more than 60 percent; the second—about 50 percent; and the third—only 20-25 percent of earnings. The lowering of the relative level has affected all categories of working people. Most affected are the most highly skilled members of the population working in the national economy.

Let us now discuss the absolute level of pension security. The reference is to the actual value of the pension in the year it is assigned and in all subsequent years in the pensioner's life, i.e., the total volume of material goods paid for by pensioners from their pensions. At the same time, it should be remembered that the pension is a strictly fixed payment, that its size is determined at the time it is assigned and remains the same for most pensioners throughout their entire "pension life." The real value of a pension can be preserved only if prices are stable on all consumer goods, including paid services. With the rise of prices, the real value of a pension, as a strictly fixed, stable payment, invariably diminishes; the pensioner's previously attained living standard also declines correspondingly. And conversely, if the prices on consumer goods decline, the real value of pensions rises. But such a trend has not been characteristic of recent times. Prices have gradually been rising. This process began in 1962 when the prices on certain foods rose dramatically. It is also continuing today. According to official data, the state retail prices that are the basis on which the price index is determined rose, e. g., by 12 percent for foodstuffs and by 8 percent for commodities in public catering. MDSU/4.MDNM/ There have been substantial price increases in cooperative trade, on the kolkhoz market, and on industrial goods imported into the nation, etc. It is difficult to make a precise evaluation of the degree to which price reforms have reduced the pensioners' absolute standard of living because much depends on the structure of their consumption, their state of health, place of residence, family status, etc. However it is obvious that this has been adversely reflected in their plight. This is particularly true of those whose pensions were awarded to them long ago. The increase—starting 1 November 1985—in relatively small pensions awarded 10 or more years ago, in accordance with the Law of the USSR "On State Pensions" did not resolve this problem all the way because it affected only about 20 percent of all pensioners.

The second reason that urgently dictates the need for pension reform is integrally connected with the restructuring of the economy. It is conditioned by the interests of social production and all society. In keeping with the general line articulated by the 27th CPSU Congress, a whole complex of measures designed to create a maximally effective motivation mechanism that will stimulate the highly productive, high-quality work of every Soviet person, is being resolutely and consistently implemented today. This is the opposite of what developed during many years of stagnation. In the recent past, there were extremely few real material incentives, with the exception of appeals, for this work. Man's more intensive labor activity remains the central problem.

Such a mechanism can only be founded on one principle—rewards for those who do a good job. This means above all that equal demands must be made on all people. Under such demands, whoever works better will also enjoy higher rewards. It would be wrong to think that material interest is attained only on the basis of just pay. This is the main but not the only lever in such a mechanism. Other elements are also of no little significance. One of them is the pension system which fully takes into account the results of past labor and the value placed on it by society. Its essence is that it must make provision for higher pensions for those who have worked better and longer. It must be remembered that the prospects for a higher pension to a considerable degree predetermines the orientation of people not only of pre-pension age, but also people of middle age or even younger. Does the existing pension system correspond to this, its first production function? Unfortunately, it has lost this function to a considerable degree. Indeed, the pensions of all citizens whose earnings are slightly above average—and there are tens of millions of them—do not differ from one another today; there is no appreciable difference in the level of pensions of those who have worked 20 or 25 years (women and men, respectively) or those who have worked twice as long.

In other words, the existing general pension system, under the influence of the same factor—the growth of the nominal wage—has gradually become an egalitarian system.

The production function of the pension system is not confined to the stimulation of highly productive, high-quality labor. This is only one of its aspects. In addition to it, there is another, no less important aspect: the pension system is designed to secure the timely and at the same time painless (very important) retirement of aging labor power from social production. Such a task acquires special urgency with the current intensification of social production. It can only be successfully resolved in one way: through the introduction of a relatively high level of pension security that does not substantially lower the material sufficiency of elderly people and their families after they terminate their labor activity.

Here it seems appropriate to recall the instructive experience of past years. As is known, our country first introduced old age pensions for workers in 1928-1929. This is what was written in the Eighth Congress of USSR Trade Unions which was held in December 1928: "Not only the interests of individual categories of the proletariat but also the needs of the corresponding parts of the national economy, the rationalization of which is inhibited as a result of the existence of aged workers with lowered labor productivity, suffer from incomplete old age insurance coverage." The 28 September 1929 decree of the Central Committee of the All-Union Communist Party (of Bolsheviks) posed the task of expanding eligibility for old age pensions, of extending pension security to all production workers, which was substantiated by the need to replace old cadres with young cadres in

connection with the rationalization and modification of technology. In 1930 the pension age was even lowered for female workers in the textile industry (from 55 to 50 years) in order to speed up the replacement of old cadres with younger cadres.

In principle, the same situation also developed in the mid-fifties. At that time, there were many elderly people working in social production who had a limited capacity for work and deficient skill levels. The principal reason for this situation was the extremely low pension or the total lack of entitlement to a pension as a result of a number of constraints and hence the impossibility of discontinuing labor activity. The pension reform of 1956, which substantially raised the level of pension security and removed the unjustified constraints, was instrumental in the retirement of practically all such elderly citizens. The share of working old age pensioners among the total number of old age pensioners declined 6-7-fold within a year after the reform and comprised only 8-9 percent.

What is the current situation? Working pensioners comprise approximately one-third of the total number of pensioners. The share of working pensioners is highest among pensioners whose age is only slightly (less than 5 years) higher than pension age. However, there is an appreciable trend among older pensioners to continue their labor activity. At the same time, many elderly people continue to work without applying for a pension (they are for the most part white collar workers, engineers, technicians, and specialists, including various managers and administrators).

The motivations for continuing labor activity after reaching pension age have been quite thoroughly studied. Material incentive is the principal motivation among them. It is expressed in the pensioners receiving all or part of their pensions during their period of work, while working people who have not applied for a pension receive relatively high wages that are significantly greater than the pension that is due them. Among the elderly working people there are many who work for the sake of maintaining their existing standard of living to the detriment of their health as well as those whose skills do not entirely conform to the demands of their work. Considering the small pensions and past labor services of such people, they are left in the ranks of the employed population frequently contrary to the interest of social production and the work collectives. Under such circumstances, enterprises and organizations are forced to perform functions for which they are not suited. It must also be said that the release of elderly people from their jobs at the initiative of the administration entails certain difficulties. It is not such an easy matter to fire a veteran who does not want to retire on pension. Every manager knows this.

Of course, the present situation is not as dramatic as it was in the fifties, but one cannot fail to take note of it.

The problem of rejuvenating the work force, of painlessly retiring the elderly work force from social production does exist and can for the most part be successfully resolved by the pension system.

The third basic reason concerns the political sphere. The existing pension system, which we proclaimed to be unified more than 15 years ago, was in fact not unified at that time, and has not even become unified to date even though some progress in this direction is seen. A unified system from the legal standpoint primarily means equal rights for all categories of working people, that concern the basic conditions and norms of pension security (which does not preclude a certain degree of differentiation for objective reasons), i. e., equal rights for the minister and rank and file employee, a party worker of any rank and a worker, a collective farmer or the member of a cooperative, a judge, a procurator, etc. The principle of legal equality, which reflects social justice, is not a declaration but is the reality that gradually becomes an element of socialist democracy. This is based on the socio-political homogeneity of Soviet society and the precise demands of the Constitution of the USSR—the nation's Fundamental Law on the equality of citizens (Art. 34). Legal equality presupposes not only the equality of Soviet citizens before the law, but also equal rights bestowed on them by the law.

Let us look at the existing pension system from these positions. There are still certain substantial differences in the pension security of blue collar (white collar) workers and collective farmers. Lower minimum pensions, the limited value placed by the law on the labor activity of collective farmers and a host of other, particular differences are frequently perceived as unjust or even discriminatory. There are also numerous distinctions in the pension security of the collective farmers themselves (equipment operators, specialists, collective farm chairmen, etc.) as well as blue and white collar workers. In recent years, special, higher pension security norms were instituted for certain categories of white collar workers. It has become more common practice to award so-called merit pensions, which are higher than conventional pensions. Recipients of merit pensions additionally receive various benefits (they pay less for housing, municipal services, drugs; they pay lower local and long-distance transportation fares; they pay less for treatment at sanatoria and health resorts; many merit pensioners receive an annual cash grant in the amount of 1.3-2 months' pensions). It is no secret that such pensions are awarded with considerably more frequency to persons occupying certain posts in the apparatus of various agencies, especially party, soviet, trade union, and economic agencies at all levels. Such people are practically removed from the orbit of the action of the general pension system. They are not directly, i. e., personally interested in its development.

As we see, there have also arisen here many acute problems that await an appropriate resolution based on a fundamentally different approach than the old one.

The second basic task is to find (naturally on the basis of accumulated experience) optimal, socially most just strategic solutions that predetermine the general content of the future law and its specific legal prescriptions. The latter are of no little significance because the plan is always realized through such norms.

What can and should be the level of pension security for the working people in the present stage of the nation's development? That is the central issue. The reference is to the level of old age pensions assigned to women at the age of 55 and to men at the age of 60, because such pensions are the basic type of pension security, and all other pensions are integrally connected with them.

Everyone acknowledges that the pension must guarantee a person the satisfaction of his normal needs that form during the period of his life, at a time when he was engaged in socially useful labor. Thus, it is first of all necessary to evaluate needs themselves. The conclusion that a working person needs more than a nonworking person (and this conclusion is not so infrequently drawn) is to our way of thinking incorrect. After people retire on pension, their needs do not substantially diminish even though they are slightly modified. Costs of getting to and from work and of restoring physical strength expended in the process of strenuous labor are smaller, for example. But advanced age and the natural deterioration of the state of health, as a result of the emergence of signs of aging of the organism, frequently lead to additional expenditures necessitated by more rational and selective nutrition, frequent payment for various services, drugs, etc.

The point is not that a pensioner needs less than a working person. There is another point. And this must be explicitly stated: society is still not in an economic position to fully maintain the previous living standard of people retiring on pension. Society is forced to give preference to the more complete satisfaction of the needs of citizens employed in the national economy. It is objectively necessary to give priority to the need of working people in the interest of the further development and improvement of production, progress, and society. However, in the process of deciding the level of pension security, we must not ignore one most important circumstance: a pensioner usually does not have a so-called family load (that is, does not have dependents who are unable to work) and therefore the level of the pension should be determined for him alone. If he has dependents, his pension naturally must be adjusted if his dependents are not receiving separate payments.

A number of economists estimate that pensions must be 67-70 percent of a person's earnings. MDSU/5.MDNM/ These estimates should evidently be corrected. As is known, pensions in our country are not taxed but earnings are taxed. "Net" earnings are earnings after taxes, which may amount to almost 13 percent. Thus, 67-70 percent of calculated earnings comprise almost 80 percent of actual earnings. Is such a high level of pension

security realistic at the present time when the effectiveness of the national economy is insufficient and measures are taken to increase it? It is probably unrealistic. In our view, such a level of pension security holds promise for the future. But the average level—slightly higher than 60 percent of actual earnings—is entirely accessible and extremely necessary. In the recent past, it has already drawn closer to this indicator and the reference is essentially to the restoration of lost attainments.

Above we discussed the "average" relative level of pension security. In specific instances, the size of pensions may deviate from the average level, that is, may be lower or higher than the average level. MDBO/What are the criteria that should be the basis for determining the size of the average working person's pension? MDNM/ This is also one of the most important problems that must be resolved in the process of drafting the law. Naturally, it is above all necessary to determine the general norm of the pension in percent of earnings. It is presently differentiated depending on its level and as a rule is 50 percent (for earnings of 110 rubles or more) or 65 percent (for earnings between 80 and 100 rubles) if the combined length of service is 25 years (men) or 20 years (women). Thus, 2 or 2.5 percent of earnings are "transferred" to earnings. But earnings are only the qualitative evaluation of labor. Another indicator characterizing labor activity is the number of years worked. This is a quantitative indicator. It is practically not used in determining the size of pensions.

In our opinion, it would be more justified to establish a uniform initial norm of pension security for all working people, let us say, 55 percent of earnings, that is, 5 percent higher than the existing minimum norm. It must be extended to all citizens, including those who receive relatively high pay. At the same time, it is borne in mind that there is no basis for preserving the existing advantages for those working people whose labor receives a low quality rating. It will hardly be necessary to introduce different demands on length of service for men and women. It can entirely be set at the same level for them. Will such a situation result in the infringement of the interests of our working people, which is inadmissible under any conditions? It will not if their potential length of service is equalized, that is, if there is real equality of the rights of women and men in this regard. For this, it would be sufficient to additionally include in the length of service of all women on a par with work certain periods of their socially useful activity that is necessary for society and the family. We believe that there should be three such key periods: (1) care for young children (up to 1.5 years of age. MDSU/6.MDNM/, and eventually up to 2 years, and in cases when it is not possible to place a child in a day care nursery or kindergarten); (2) care for a seriously ill child regardless of his age; (3) care for a group I invalid, that is, a person requiring constant care (time spent caring for a group I invalid for specified reasons is now counted toward length of service).

The level of the pension must also be affected by the quantitative indicator of a person's labor contribution—

the number of years worked in excess of the number required to qualify for the basic pension in percent of earnings. What is more, an entirely consistent solution is required here. It is frequently proposed to increase the pension for length of service in excess of the general norm for a certain minimum number of years, for example, 5 or 10. Such solutions are in the nature of a compromise. Their implementation will not lead to the total differentiation of the level of pension security depending on the length of service and this is a substantial criterion of social justice in the pension security of the working people. In other words, a difference in length of service by even one year must (*ceteris paribus*) be reflected in the size of the pension. The practical solution presents no difficulty. All that needs to be done is to raise the basic size of the pension (55 percent of earnings), let us say, by 2 percent for each year of service in excess of the accepted standard (if the length of service is less than the standard, the pension is computed in proportion to the existing length of service).

Strategic solutions concerning the level of pension security must also be developed for certain other very important questions. One of them is the **minimum and maximum size of pensions**. The lessons of history are instructive in this area. Past mistakes must not be repeated and this requires that they be shown one more time.

In the past, the minimum pension was raised on a volitional, "discretionary" basis, often belatedly and not simultaneously for all categories of pensioners and moreover the increase in the minimum pension has lagged behind the attained minimum level of pay. We also emphasize the special social significance of the minimum pension: millions of people, including "old" pensioners whose pensions were awarded many years ago, are receiving these pensions; the minimum pension predetermines to the greatest degree pensioners' low income status.

Specialists have probably developed a consensus on the minimum pension. It must be oriented toward the minimum level of pay in the nation, must constitute a constant part of this pay (75-80 percent), and must automatically rise when it increases. It follows from this that the draft of the new law must define not a firm minimum pension but only its percentual correlation with minimum pay. Such a variant of the solution entirely excludes subjectivism on this question. However there are differences of opinion on the need to correct the minimum on the basis of the length of service. More justified is the decision that the minimum pension would be increased on general grounds if the total length of service exceeds the established standard (just as for all other pensions—two percent for every year of service in excess of the established standard). Consequently, the point at issue is the introduction of a flexible minimum.

The maximum pension was set in a fixed sum in 1956 (120 rubles a month). MDSU/7.MDNM/ At that time, its level was quite high. It was almost two times higher

than the average wage of blue and white collar workers in the national economy and consequently performed in full its function of preventing excesses in pension security. Subsequently it gradually entirely lost it and essentially became an unjustified limiter of the level of pension security for skilled workers. After all, it now comprises about 60 percent of the average wage. Compare the cited data: almost 200 percent of average earnings in 1956 and only 60 percent now. This is also a lesson in history. The reason for this situation is the stability of the maximum under the conditions of the rapid growth of pay and the lack of the corresponding legal mechanism that ensures its automatic increase with the growth of earnings. Something similar was seen in our pension system before the 1956 pension reform. A maximum pension was also set at that time not through its establishment in a fixed sum by calculating pensions according to the established norms from earnings, from a limited maximum which has led to the same result. Thus the determination of the maximum pension in an absolute sum (directly or indirectly) has already twice led to a sharp decline in the level of pension security and to the need for pension reforms to bring about a cardinal correction in the situation. Hope for the timely increase in the maximum pension by "volitional" means with the increase in pay has not been justified.

The need has come to establish a maximum by another means, without the fixing an absolute sum, by making it dynamic and indicative of changes in wages. (This is evidently necessary to the same end: in order to prevent excesses in the pension system). There are several possible alternative solutions. One of them is to specify a certain correlation between the maximum pension and the minimum (let us say, three times higher) and consequently the existing level of the minimum wage. The result will be that an increase in the minimum wage in the nation will be simultaneously accompanied by an increase in both the minimum and maximum pension. At the same time, the maximum pension must be flexible (just like the minimum), that is, must increase when the length of service exceeds the established standard.

Thus, the proposed procedure for determining pensions is based on the premise that the level of the pension is always connected with labor and its result: the higher pension goes to the one whose earnings are higher and if earnings are the same, to the one who has worked longer; there will be changes in the size of the minimum and maximum pensions with rises in the minimum wage and the relative level of pension security will be preserved with the further growth of wages.

Nor should we fail to bring up one more question. **How should earnings on the basis of which pensions are determined be calculated?** They should be connected with the level of pension security. Pensions are now calculated on the basis of average monthly earnings for a short (the last 12 months of work) period or a longer period (5 consecutive years of work out of the last 10 years before

applying for pension). We will not go into the fine points of the existing rules in the hope that they are well known. We will only discuss their weak points.

Is the pension always calculated on the basis of actual earnings? No, not always. Actual earnings are often higher or lower than the earnings that are used as the basis for computing the pension. The fact of the matter is that earnings used as the basis for computing pensions do not include certain payments: for overtime work, for work on days off, but this work is widespread and mandatory for workers; payment for the performance of multiple jobs is not counted among earnings for most working people, but is counted for individual categories, etc. And we count average monthly earnings only for complete months of work. This frequently leads to unduly higher earnings (a person works 2 full months out of the last year and receives a pension based on average earnings for these 2 months). We must finally establish order in this area. In order to do so, we must return to the rules that were in effect prior to the pension reform of 1956 when earnings incorporated all types of pay, including those indicated above. These rules were revised—as practice has shown—without sufficient grounds for doing so.

Nor is everything indisputable regarding the periods for which average monthly earnings are considered for pension purposes. Short-term earnings cannot reflect the earned income that is characteristic for a given person. Social security agency personnel who process applications for pensions repeatedly encounter the exaggeration of earnings during this period and occasionally abuses as well. Higher short-term earnings are a natural phenomenon, are the result of continuous pay raises, the revision of rates and salaries, and other pay reform measures. Another factor here, of course, is a person's attempt to work better and earn more so as to receive a larger pension. Such a desire is natural. The only thing is that it should be realized in good conscience. It should also be considered that the vocational skill levels of many categories of working people rise rather than decline as they approach retirement age. Moreover, the pay of a number of specialists—teachers and physicians, for example—is regulated in such a way that they receive the maximum rate (salary) soon before they reach retirement age (after 25 or 30 years work in their specialty).

Research shows that the great majority of blue and white collar workers (approximately 95 percent) prefer to calculate earnings for pension purposes on the basis of a short period because the earnings are higher. What will happen if the short period is abolished and only the 5-year period is preserved. It is estimated that pensions will decline by roughly 5-7 percent.

The reason for computing pensions on the basis of average monthly earnings for a longer period of time is that the earnings of some people, even if they continue to perform the same kind of work, diminish somewhat in the last years before they reach retirement age. The usual

age-related changes leading to slower reaction time, to the earlier onset of fatigue, etc., make themselves known in the human organism. This factor prompts many people to change occupations in the pre-retirement period, to change to easier and hence less well paid work. Is 10 years (including 5 consecutive years) a sufficiently long period upon which to base the application for a pension? Does a person's peak performance always fit within this period or does it go beyond it? Practice has provided the answers to these questions. Research shows that people reach their peak at different times. In the case of blue collar workers, it comes earlier; in the case of white collar workers, it is closer to retirement age. The transfer of workers from strenuous to less strenuous work is often seen earlier than 10 years before they reach retirement age, etc.

It is hardly feasible to abandon the short-term calculation of average monthly earnings. But this period cannot continue to be as long as it is today. In our view, it should be increased to 2-3 years. As regards the longer period, we believe that the calendar period before applying for pension should be increased to at least 15 years. At the same time, earnings for past years in all cases require correction primarily on the basis of changes in prices on consumer goods. Earnings must also be evaluated in modern terms on the basis of the changes that have taken place in these prices.

Let us examine the problem of preserving the absolute level of pension security, that is, the real value of the pension. This problem concerns virtually all pensioners. We have already said that a pension is a strictly fixed payment that as a rule does not change throughout a person's entire "pension lifetime." The important thing is not the actual sum of the pension in rubles but what a person can buy with it, what a person can spend it on, and the degree to which it satisfies a person's need. When the state determines the size of the pension, it in a sense assumes the obligation to maintain the living standard that it established at the time the pension was awarded. Incidentally, this concerns not only pensions but all other fixed payments, for example, various grants that are paid in fixed sums for child maintenance (to single mothers and mothers of many children, wives of servicemen on active duty, low-income families; maternity grants; infant care grants); scholarships, etc.

Prices on consumer goods have been transformed over time. The restructuring and normalization of the economy require reform of the wholesale and evidently retail prices as well. As is known, our prices on food and municipal services are unjustifiably low at the same time that our prices on all manufactured consumer goods are unduly high. Many economists believe that price reform and the orientation of prices toward production costs are an inevitable consequence of the economic reforms taking place in the country. Whether it will be possible to maintain the real value of pensions entirely under these conditions, considering the particular features of consumption of elderly people, is still problematic.

In our view, the pension system must be thoroughly prepared to adjust pensions to retail price reforms and to conform with production costs. This question also requires a strategic solution. Its essence is simple. It is clearly formulated by economists: pensions must be raised if the price index rises and must not be changed even if the price index declines. MDSU/8.MDNM/ The legal mechanism and periodicity of this adjustment should be written into law. The need of maintaining the real value of pensions, that is, of continuously adjusting them in accordance with changes in prices on goods and services is a problem that has been addressed only recently. It is sometimes supplanted by another need—the need to adjust pensions in keeping with their “occupational aging.” Indeed, wages rise and there is also an increase in the absolute size of pensions that are calculated on the basis of individual earnings. This size is higher in the case of persons retiring on pension later compared with other people at the same level (the same occupation, the same skill level, etc.). There have also been sharp changes in pay as a result of the cyclicity of rising rates and salaries and society’s reevaluation of the corresponding professional labor.

The 26th CPSU Congress posed the task of bringing previously awarded pensions gradually closer to the level of pensions currently awarded to people that are in similar occupations and that have similar skill levels. This process has begun: relatively small pensions awarded in accordance with the Law of the USSR “On State Pensions” are already being raised. The decisions of the 27th CPSU Congress call for raising pensions previously awarded to collective farms. The opinion that “such a mechanism can also be preserved for the future” was expressed in the journal (No 8, 1987, p 84). This is a good proposal. However, its implementation does not eliminate the need to adjust pensions as prices rise; this is a separate, individual problem.

The question of drafting a new pension law is not new. This suggestion has also been made in the past. However, they have chiefly boiled down to the creation of a law that would award pensions to blue (white) collar workers and collective farmers on an equal basis. The task here is considerably broader and more complex. We must draft a law that embraces all categories of citizens and the country’s entire population; a law that is open, accessible, and comprehensible to every person. Under the present conditions of the democratization of Soviet society, total glasnost, and the elimination of closed zones in pension security, this task can be realized. The drafting of the law requires new thinking and the free and broad discussion of all its problems. Let us discuss some of these problems that have political significance. It was stated above that there are still certain substantial and particular differences in the pension security of blue collar workers, white collar workers, and collective farmers; that there are separate and higher norms of pension security in effect for certain categories of white collar workers; that so called merit pensions are widespread, etc. Can such a situation be tolerated in the future? Of

course not. There is but one solution: the total equalization of the pension rights of blue (white) collar workers and collective farmers as well as of cooperative members; the elimination of basic norms of pension security for certain categories of white collar workers; and the abolition of merit pensions. This does not mean that a deserving person may not receive a slightly higher pension. At the same time that we abolish privileged pension subsystems, it would be expedient to provide in the law itself for a certain increase in pensions to such persons, but for services recognized not in the secrecy of the room where the merit pension awards commission meets, but in an official procedure. Experience in this area exists: entitlement to a merit pension is granted to Heroes of the Soviet Union, Heroes of Socialist Labor, to persons awarded the Order of Glory (third degree); pensions of holders of the Order of Labor Glory (third degree) and the Order for Service in the USSR Armed Forces (third degree) are raised by 15 percent. It seems to us that the list of officially acknowledged services conferring entitlement to a higher pension could be expanded (in particular, it should include persons that have been awarded honorary titles, high scientific degrees and ranks, etc.).

Of all the special pension security rules in effect at the present time, the only ones that probably can be preserved are those that pertain to career servicemen including those serving in organs of the KGB as well as MVD command and rank and file personnel in view of the difficulties long years of military and other service and the difficulty of retraining for other kinds of work after leaving it. But the basic terms and norms of their pension security should be articulated in the pension law and should be known by everyone.

And the last point. Everything that was said above concerned pensions that were awarded for labor. But after all there are citizens who for various reasons could not “earn” a labor pension. Pensions were instituted a long time ago for congenital invalids in groups I and II, even though they are for some reason called monthly grants. Of course, terminology is not the important thing. But pensions have not yet been introduced for all the other incapacitated citizens, who are relatively few. Grants are usually established only for those who are declared to be group I or group II invalids, who have no means of livelihood or relatives with the obligation to maintain them, after the appropriate determination of the “need” for them on the basis of legislation of the union republics. Who are these old people who do not receive pensions. Research shows that they are exclusively women, for the most part, mothers who have already reared their children, who have cared for gravely ill relatives, and who have kept house for their family. The time has come to give them the right to a pension. It could be called a “social” pension. Such a pension could be awarded at an older age, for example, after the age of 65. Naturally it should be lower than the minimum “labor” pension. Such a solution is demanded not only

by humane considerations. It stems from the Constitution of the USSR which states that all of our country's citizens have the right to maintenance in old age and disability.

We have examined what we consider to be the most important general problems concerning pension security for the elderly without claiming that our judgments are beyond question. There are many other problems that affect in particular the interests of those who work under adverse conditions, who have become disabled, or have lost a breadwinner; also of substantial importance are questions relating to the exercise and defense of pension rights. Special attention is merited by the problem of stimulating the more active participation of veterans in social production. After all, its solution is one of the objectives of the forthcoming pension reform. The debate continues.

Footnotes

1. PRAVDA, 12 September 1987.
2. Materialy Plenuma Tsentralnogo Komiteta KPSS, 27-28 yanvarya 1987 g. [Materials of the Plenum of the CPSU Central Committee, 27-28 January 1987], Moscow, Politizdat, 1987, p 11.
3. See: A. Solovyev, "A New Pension Law is Being Drafted," SOTSIALISTICHESKIY TRUD, No 4, 1987, p 79.
4. See: Narodnoye khozyaystvo SSSR v 1985: Statisticheskii yezhegodnik. [USSR National Economy in 1985: Statistical Yearbook], Moscow, Finansy i statistika, 1986, p 478.
5. See: S. Shatalin, "Social Development and Economic Growth," KOMMUNIST, No 14, 1986, p 70.
6. Under the existing rules, this time is included in the length of service of only those women who were either working or studying at the time they gave birth.
7. We do not discuss higher maximum amounts (140 and 160 rubles a month) introduced in recent years for individual categories of workers employed in underground work, in work involving hazardous conditions, and work in thermal shops. They are atypical.
8. S. Shatalin, MDBU/Op. cit., MDNM/

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Statistical Profile Of Women In Workplace

18280047 Moscow IZVESTIYA in Russian 5 Mar 88 p 1

[Article by Yu. Rytov; "Statistics And Our Commentary: Women At Work And Home"]

[Excerpts] The USSR State Committee on Statistics reports that the total number of women in our country is 149.2 million which is 53 percent of the overall population. Among laborers and professional workers, women make up 60,450,000 persons or 50.8 percent of the total number.

Yes, there was a time when women held male professions. They not only sat on tractors and chopped up small pieces of coal, but also dragged railroad ties. Was it a war we were anticipating? It's possible. Nonetheless, echoes of such "equality" are sharply felt even to this day.

Unfortunately, official statistics don't show the number of women engaged in heavy, physical work. I called the All-Union Central Council of Trade Unions. No data could be found there either. I simply had to be satisfied with 1986 data. With a certain degree of accuracy, the information makes it possible to get a clearer general picture.

Why am I stressing such negative facts at this preholiday time? Because up to now, in comparison to the male, the female's lot is very difficult. Here it is one of our most serious problems, and we have no right to forget about it, either on holidays or on regular days.

Yes, the role of our women in industrial and public life is constantly growing. For example, among the deputies of the USSR Supreme Soviet, 33 percent are women. Their proportion is still higher in the local soviets at 49 percent. More than half a million women manage enterprises, establishments, and organizations. Around a million are heads of factory shops, sections, and departments. Women make up 60 percent of specialists with higher and secondary specialized education.

We have developed branches and professions where women occupy leadership positions. They total 82 percent in trade and public catering sectors. In public health and social welfare they number 81 percent; in education, 75 percent.

Women engineers total 58 percent. Agronomists, livestock specialists, and veterinarians come to 45 percent; medical doctors, 67 percent; economists, 87 percent; accountants, 89 percent; librarians and bibliographers, 91 percent.

Here is what unwittingly catches one's eye. In the "female" professions and branches, the wages are lower than in the "male". Only in recent years have real measures been taken to restore justice. Last year, for

example, teachers and other workers everywhere in the education field received a wage raise. Wage benefits for workers in children's homes and boarding schools have been expanded. Periodic wage scale increases for workers in public health and social welfare are continuing.

Here are the results of selective research on budgeting time for both women laborers and professionals. How is their average workday allocated? The average work time comes to 7 hours, 57 minutes. The time connected with work (traveling to and from workplace, a lunch break, starting and ending shift) comes to 1 hour, 38 minutes. Forty-six minutes from the workday and 1 hour, 25 minutes of the day off are spent in purchasing goods and services. Three hours, 13 minutes from the workday and 6 hours, 18 minutes from the day-off go to housekeeping. What remains (deducting for sleep), is 2 hours, 24 minutes. This is so-called free time.

The utilization of free time is also extremely interesting. One spends an hour, 9 minutes a day, on the average, in

both television viewing and radio listening. Eighteen minutes are spent in newspaper, magazine and fiction reading (don't flatter yourselves, you colleagues of the pen. Women don't read us!). Studies, improving qualifications and public work occupy 11 minutes. The same amount of time is taken up with walks and sports activities. Seven minutes go for movies, theater, sports events and so forth. Just a little more, 8 minutes, is spent on guests, relatives' and acquaintances' visits, cafes, restaurants (including other types of relaxation).

Here comes the real question. How much time is spent on child raising? I think the answer will shock you; 17 minutes! Really now, what kind of family upbringing are we talking about? Working mothers physically don't have time to do this.

The facts show the sad state of our services sphere...

ORGANIZATION, PLANNING, MANAGEMENT

Changes Required in Machine Building Discussed
18200077a Moscow *PLANOVOYE KHOZYAYSTVO* in
Russian No 1, Jan 88 pp 16-23

[Article by M. Karpunin, candidate of economic sciences: "Economic Problems in More Rapid Development of Machine Building"]

[Text] Among the immediate tasks of the 12th Five-Year Plan, special attention is being devoted to accelerated development of branches of the country's machine-building complex. And there is an objective basis for this. Only on the basis of developed machine production is it possible to provide for an organic combination of the achievements of the scientific and technical revolution and the advantages of the socialist system of management as well as a solution to such a key problem as doubling the country's production potential by the year 2000 along with radically improving its quality.

In July 1987 in the party central committee there was a conference at which they considered the course of the implementation of the Program for the Modernization of Domestic Machine Building in light of the decisions of the 27th Party Congress and the June (1987) Plenum of the CPSU Central Committee. Speaking at the conference M. S. Gorbachev emphasized that "profound qualitative transformations will be necessary in all branches of the national economy. But still, while fully understanding this, we shall give priority to machine building. Its accelerated development is the basis for rapidly updating the country's production apparatus, materializing scientific ideas, achieving high, stable rates of growth of the economy and national income, and solving social problems."¹

There are significant reasons why the task of more rapid development of machine building is seen as being so crucial. The fact is that the modern level of domestic machine building and its scientific-technical and production base do not meet the growing requirements of economic and social development. This lack of correspondence did not manifest itself at once. As analysis shows, beginning in 1975 there was a tendency toward a reduction of the growth rates of machine-building output: under the 9th Five-Year Plan the average annual rate of increase was 10.5 percent, the 10th—6.4 percent, and the 11th—4.6 percent. There is a similar dynamic for the increase in rates of development of machine building as compared to industry as a whole: under the 9th Five-Year Plan it was equal to 22 points, the 10th—12, and the 11th—only 5 points. The reduction of the quantitative indicators was not buttressed by significant purposive transformations in the structure of the equipment that was produced in favor of increasing the output

of technical equipment that produces the greatest economic and social effect. Nor was it justified from the standpoint of satisfying the demands of particular consumers.

Such a state of affairs in machine building became an impeding factor in the acceleration of the updating of the active part of fixed capital and the increase in labor productivity in all branches in the national economy. The proportion of manual labor remained excessively high and the sphere of repairs loomed. At the June (1985) Conference in the CPSU Central Committee on Questions of Accelerating Scientific and Technical Progress it was noted that one-fourth of the country's machine tool supply and 6 million workers are now employed in repair shops and about one-fifth of the ferrous metals are used for purposes of repair.

The 12th Five-Year Plan is called upon to provide for a significant acceleration of the development of machine building. The output of commercial products in the branch during 1986-1990 will increase by 43.2 percent as compared to 25 percent throughout all of industry and it should be higher by a factor of 1.7 than it was during the years of the 11th Five-Year Plan.

Let us discuss the three main sections of this program. The first includes measures for radically raising the technical level and improving the quality of machine building products as well as their ability to compete. We are speaking about reaching the world level in terms of the most important parameters of the main machine-building products during the next 6-7 years. Under the current five-year plan it is intended to create and master serious production of 320 kinds of technical equipment of new generations that are capable of providing for extensive introduction of progressive resource-saving technologies to open up the path to automation of all stages of production, to increase labor productivity many times over, to reduce the material-intensiveness of production, and to increase the output-capital ratio. To do this it will be necessary to increase the speed of updating of machine-building products by a factor of almost 3 (from 4.5 percent in 1985 to 13 percent in 1990) and, correspondingly, significantly increase the capital-labor ratio for engineers.

The second section of the Program of Modernization is devoted to questions of increasing and simultaneously transforming the production-technical potential of machine-building itself. It includes measures for:

acceleration of the updating of fixed capital, technical reequipment and reconstruction of a large part of the machine-building plants on the basis of extensive introduction of principally new technological processes, highly productive equipment, and advanced methods of organization of labor and management;

deepening of specialization and expansion of cooperation of production, development of enterprises of assembly and mechanical assembly types, narrowly specialized plants for manufacturing blanks of parts and components for branch and interbranch purposes;

increased effectiveness of the utilization of existing production capacities and a significant reduction of the time periods for the assimilation of newly introduced ones;

provision of high mobility and flexibility of the production apparatus of machine-building enterprises and their capability of reacting rapidly to the dynamically changing demands of the national economy for progressive technical equipment.

In order to provide for a high level of dynamism of the forthcoming reconstruction, they have earmarked extensive development of the production of special technological equipment for the needs of machine building itself. During the 5 years this output will increase by a factor of 9 and will amount to 12 billion rubles.

At the same time measures are being taken for more effective utilization of production capital, the reserves of which in machine building are fairly large. A clear example is the coefficient of shift work of equipment. In machine building for many years now it has been at the level of 1.4; even progressive kinds of equipment are not used on two full shifts. According to data from daily observations conducted by the USSR Central Statistical Administration on 15 May 1986, the coefficient of shift work of metal-cutting machine tools with numerical program control amounted to 1.51, processing centers—1.62, and forge and press machines with numerical program control—1.32. According to the Program, this should increase for metal-processing equipment used in basic production from 1.46 in 1985 to 1.7 in 1990, equipment with numerical program control—from 1.47 to 1.9, automated lines—from 1.7 to 1.9, and flexible production modules and systems for various technological purposes—from 1.6 to 2.5.

Measures of the third section of the Program of Modernization are directed toward creating the organizational and economic prerequisites for more rapid development of machine building. They are addressed to all levels of economic management (the brigade, shop, enterprise, association, ministry, and machine-building

complex as a whole) and all categories of workers, and they encompass practically all stages of the life cycle of machine-building items (from scientific research and experimental design developments to technical servicing and salvaging of equipment that has worked out its service life). The most important constituent part of this section is to clarify the goals and ways of achieving them. To do this each ministry, association and enterprise must formulate long-range comprehensive plans for the updating of equipment on the basis of modern technical equipment and modern technology.

In essence we are speaking about having each labor collective have a present and future image of its enterprise in all of its completeness. The collective should be clearly aware of the amount of expenditures and resources necessary for the creation and production of products that embody advanced achievements, the restructuring of technical equipment and technology of production, improvement of working conditions, improvement of the qualifications of personnel, and the development of the social sphere, and they must be able to see the effect that will be produced by the implementation of the measures that are earmarked.

A no less important prerequisite that is intended to bring domestic machine building up to a qualitatively new level is the mastery of the ability to work under the conditions of state acceptance. In keeping with the decree of the CPSU Central Committee and the USSR Council of Ministers of 19 May 1986, "On Measures for Radically Improving Product Quality," it was introduced at 1,508 enterprises of the country, including 902 machine-building enterprises. On 1 January 1988 another 727 associations and enterprises of various branches of industry were added to these and 291 of them were from machine building. As a result, state acceptance has encompassed three-fourths of the machine-building products that are produced.

Such in the broadest outlines are the main constituents of the new Program for Modernization of Soviet Machine Building. How is it being carried out? Which features and tendencies determine the process of its implementation and which problems require immediate solutions? In order to answer these questions it is necessary to do an analysis of the results of the work of the machine-building complex during the first year and a half (see table).

Table—Machine Building at the Beginning of the 12th Five-Year Plan (in %)

Indicator	1986		First Half of 1987	
	Planned	Actual	Planned	Actual
Growth rate of commodity output	105.6	106.4	107.6	104.3
Proportion of the most important kinds of machine building products for which the plan was fulfilled	—	43.3	—	22.0

Table—Machine Building at the Beginning of the 12th Five-Year Plan (in %)

Indicator	1986		First Half of 1987	
	Planned	Actual	Planned	Actual
Proportion of products of the highest quality category in overall volume of commodity output	39.7	36.6	35	34.8
Updating of products	6.5	4.3	7.6*	4.3
Fulfillment of plan for product sales taking contractual commitments into account	—	98.5	—	96.2
Growth rate of labor productivity	106.1	107.1	107.7	104.1
Reduction of production cost of commodity output	-1.6	1.42	-2.0	-0.72
Growth rate of profit	114.9	113.5	118.2	105.2
Fulfillment of plan for startup of fixed capital for production purposes	—	75	—	84
Updating of active part of fixed capital	10.9	8.1	12.1*	3.0
Proportion of enterprises that did not fulfill plan for:				
Product sales taking agreements into account	—	51.2	—	59.2
Labor productivity	—	21.2	—	44.5
Reduction of production cost	—	26.8	—	40.4
Profit from industrial activity	—	21.3	—	31.7

* For year

First of all one must say that the tendency toward more rapid development of the production of progressive technical equipment is gathering force. During 1.5 years machine-building enterprises for the first time in the USSR have assimilated the production of more than 3,000 kinds of technical equipment, more than 1,000 of which were assimilated in the first half of 1987. More rapid rates (by factors of from 1.2 to 1.8) marked the increase in the output of computer equipment, flexible production modules, equipment with numerical program control, specialized technological equipment for internal needs, and so forth. The front of the utilization of progressive technologies is expanding. And still, as the data that are given show, the economic indicators of the activity of the branches of the machine-building complex deteriorated during the second year of the 12th Five-Year Plan. This happened mainly because of the lack of balance of the production plan with the material resources and the unsatisfactory material and technical supply; interruptions in the delivery of electric and thermal energy, means of transportation, natural disasters and several other external factors; the poor preparedness for work under the conditions of state acceptance; and intraplant shortcomings in the organization of production and labor.²

Material and technical supply has always been a bottleneck for machine builders because of the difficulty in providing for constant updating of the products that are produced. In 1987 these difficulties were exacerbated since the planned rates of updating and technical equipment increased sharply (in terms of the proportion of the most important products produced at the world level in the volume of its production—to 38 percent instead of 29 percent in 1986 and in terms of the degree of updating of all items—up to 7.6 instead of 4.3 percent, in terms of the proportion of equipment equipped with microprocessors—up to 7.1 percent instead of 2.8 percent, and so

forth). And for individual ministries—the USSR Ministry of the Electrical Equipment Industry, the USSR Ministry of the Machine Tool and Tool-Building Industry, the USSR Ministry of Instrument Making, Automation Equipment and Control Systems, and the USSR Ministry of Chemical Machine Building—even higher rates of renewal were planned, which meant a significant change in the structure of material resources that were used. It is also necessary to take into account the high rates of general growth of the volumes of production of machine building products—7.2 percent and the practically equivalent reduction of expenditure norms (per 1 million rubles' worth of commercial output) of the basic kinds of materials, mainly rolled ferrous and nonferrous metals, and the limitation on the procurements of a number of materials and batching items through import.

All this led to a situation where the system for material and technical supply could not cope with normal support for the task that had been set. As early as the middle of the first quarter of 1987 machine builders were not given all of their supplies of 370 kinds of materials and batching items. And although by the end of the first quarter the number of kinds had decreased to 57, in terms of a number of these the demand was not satisfied even in August.

It should be noted that the funds that have been allotted are not being utilized promptly or completely. To a large degree this pertains to enterprises of the metallurgical, chemical and electronic industry. The "traditional" debtors of machine builders were the Kommunarisk and Magnitogorsk metallurgical combines, the Zaporozhye Dnepropetsstal Plant, the Rustava Nonpressure Pipe Plant, the Volga Plant for Rubber Items, the Leningrad Krasnyy Vyborzhets Association, the Yaroslav Lakokrasnaya Association, the Pavlodar Chemical Plant, many plants of the electronics industry, and hundreds of other

associated enterprises. But even within the machine-building complex itself the fulfillment of the plan for cooperative deliveries was poorly organized, especially for engines, bearings, systems for numerical program control, relays, heat regulators, and other electrical equipment and instruments.

The associated workers let down their colleagues from machine building both in terms of the rates and in terms of the scale of assimilation of progressive new materials and batching items. Of the 214 kinds to be delivered for implementation of the Program for Modernization in 1986, the assignments were fulfilled for only 113, and in the first half of 1987—154 of the 304 kinds. The greatest arrears were found in the USSR Ministry of Ferrous Metallurgy and the USSR Ministry of the Chemical Industry.

The scale of production of machines and equipment in 1987 were affected by the lack of preparedness of the majority of labor collectives for work under the conditions of state acceptance. Far from all enterprises were capable of meeting the new requirements for the quality of technical equipment that was manufactured. In the machine-building complex as a whole, each month state acceptance returned for improvement up to 20 percent of the prepared items that went through monitoring by the division for technical control. At individual plants more than half of the products were not accepted the first time they were submitted.

Practically everywhere the introduction of state receiving has increased the duration of the production cycle and increased the labor-intensiveness of the manufacture of products. This is associated with the elimination of deviations from technology, work for eliminating defects, and more careful performance of all production operations. Moreover, it is certainly not everywhere that they have technological equipment, fittings, control and measurement instruments, and tests that provide for the necessary provision of processing and verification of many technological operations, above all finishing operations.

For example, the labor-intensiveness of the manufacture of fire alarm equipment and items for medical and industrial purposes in the Aktyurentgen PO of the USSR Ministry of Instrument Making, Automation Equipment and Control Systems increased from 4.2 to 10 percent, and Iskra and Omega computers increased in the Schetmash PO (Kursk) of this same ministry—from 3.9 to 5.5 percent. For the first association this means an annual increase in labor expenditures of 534,000 norm-hours and for the second—1,105,000 norm-hours, which are equivalent to the annual work time of 250 and 500 people, respectively.

State acceptance is one of the levers for solving the problem of quality. Its application involves additional outlays, but they are justified. State acceptance has shown that in many areas of the majority of enterprises

where it has been introduced, the level of organization of production and labor, technological and performance discipline, the quality of normative-technical documentation, technology, the degree of supply of production with progressive kinds of equipment and instruments, fittings and means of measurement, personnel qualifications and their responsibility for the matters entrusted to them do not meet modern requirements.

More rapid development of machine building at many enterprises is being held up by such a significant factor as the lack of sufficiently substantiated, goal-directed measures for accelerating scientific and technical progress. An inspection of the organization for updating products at plants of the USSR Ministry of the Machine Tool and Tool Building Industry that was conducted by the USSR People's Control Committee revealed the following. In 1986 the plants did not fulfill the assignments concerning this indicator. Of the 102 new models of machine tools, flexible modules and forge-press machines recommended for output in 1987 did not surpass the previously produced analogues in terms of productivity and reliability. The state of affairs is not much better in the USSR Ministry of the Electrical Equipment Industry, the USSR Ministry of Agricultural and Tractor Machine Building, the USSR Ministry of Heavy Machine Building and several other ministries of the machine-building complex.

One of the reasons for this situation is that progressive methods of planning are slow in being introduced. Functional cost analysis is still being used on an insignificant scale in the creation of new technical equipment although we have worked out its methodology fairly well. The result of this neglect, on the one hand, is that many kinds of equipment are manufactured at a loss and as a result the resource-intensiveness of the introduction increases and, on the other hand, the consumer qualities are inadequate and this causes an increase in operational expenditures when utilizing this equipment. And the functional cost approach to organizing the labor of specialists has other merits as well.

The creation of technical equipment of the world level reflects the outdated organization of scientific and technical information in all of its basic constituent parts, including the technology for searching and the techniques for processing; the weak research and experimental base of academic and branch scientific research institutes and design bureaus; the imperfection of the mechanism for influencing science and production and the long time it takes to abandon stereotypes of existing forms of organization and payment for the labor of scientific and engineering-technical workers as well as methods for moral and material incentives for their creative contribution to the acceleration of scientific and technical progress; the low capital-labor ratio of specialists; and the poorly arranged connections with associated workers.

Decisive conditions for accelerated achievement of the new goal in the development of the country's productive forces are the material and technical base for machine building itself and the complex of technologies applied in it. A significant place in the Program for Modernization of domestic machine building is allotted to the achievement of a qualitatively new condition of the branches of the machine-building complex. And this must be a twofold process. On the one hand, in the next 7-10 years it is necessary to conduct a practically complete reequipping of plant facilities and replace worn-out and obsolete equipment and, on the other, provide for more thrifty utilization of the newly created potential. The immediate need for such an approach is shown by the following figures. During the past 10 years the degree of wearing out of fixed industrial production capital, mainly machines and equipment, in the majority of machine-building branches increased by a factor of 1.5-1.6. Expenditures on repair doubled. One-fourth of the equipment requires immediate replacement because of wear and tear and obsolescence and about half of it is in need of radical modernization since it does not provide for the proper product quality or the necessary level of labor productivity and this leads to increased material and energy expenditures. Assignments of the Program for Modernization are not being fulfilled with respect to providing machine builders with automated work places with high productivity and various kinds of peripheral equipment for computer complexes.

The state of affairs is even worse in certain branches of machine building, including key ones. In the USSR Ministry of the Machine Tool and Tool Building Industry, two-thirds of the stock of machine tools are universal, with manual control, half of the equipment does not meet modern production requirements and is obsolete, and one-fifth of it is more than 20 years old. At the same time the technical reequipping of enterprises is held back because of the inadequate allotment of funds for the required equipment. In 1986 and 1987 orders from machine builders in terms of the quantity and assortment of equipment ordered for reconstruction and reequipping were satisfied by only 80 percent, the demand for automatic lathes and semi-automatic machines—by only 51 percent, polishing machines—38 percent, heavy and unique machine tools—35 percent, and tooth-cutting machines—33 percent.

For the machine-building complex as a whole the plan for the startup of fixed capital for production purposes was realized by 75 percent in 1986 and 84 percent in the first half of 1987, the updating of the active part of existing fixed capital amounted to 8.1 percent in the first year of the 12th Five-Year Plan while the plan was for 10.9 percent, and in the first half of 1987—3 percent of the annual plan was for 12.1 percent.

In terms of the quantity of metal-cutting equipment in operation, we have caught up with all the highly developed industrial countries but in terms of the structure and level of its utilization no appreciable changes have

taken place. The coefficient of shift work of equipment only approaches 1.5. New and the latest technologies (laser and electronic beam, plasma, mold forming under superplastic conditions, high-speed mechanical processing and a number of other progressive progresses) have not yet come to prevail. And without them, simply by increasing the quantity of traditionally known kinds of equipment it is impossible to achieve qualitative changes in the development of machine building.

The existing system for training and increasing the qualifications of specialists and workers does not meet modern requirements and does not provide for a priority approach to the latest directions of scientific and technical progress. As a rule, the qualifications of specialists and workers are increased episodically while this process should be continuous and serve to solve problems of carrying out technical reconstruction of enterprises and introducing the achievements of scientific and technical progress into production.

One of the reasons for the unsatisfactory utilization of the potential of machine-building branches is that they are slow in overcoming conservatism in specialization and cooperation of production. As we know, in domestic machine building there is a prevalence of the object form of specialization of enterprises (in the production of particular kinds of items) and party technological specialization are relatively poorly developed. Large machine-building plants, as a rule, have an entire range of numerous shops of basic—from procurement to testing—and auxiliary productions. The list of elementary parts and components manufactured at these enterprises amount to tens and sometimes even hundreds of thousands of kinds. This entails, especially during the period of assimilation of new items, unjustifiably large volumes of work for planning and manufacturing technological fittings and instruments, it leads to a dispersion of the forces of engineering and technical personnel and it creates difficulties in carrying out planned production according to the products list and applying the latest technology at each work place.

Practice shows that in specialized production, the higher the labor productivity and product quality the greater the possibilities of applying various forms of automation. Thus in a specialized plant as compared to shops and sections for manufacturing screws, bolts, nuts and other standard fasteners at machine-building plants, the average technological labor-intensiveness is lower by a factor of 6 and the yield of products from one square meter is higher by a factor of 2.5 and the utilization of metal is more effective by a factor of 1.7. The labor-intensiveness of the manufacture of 1,000 standard coupling nuts at a specialized plant is 30-35 norm-hours and at machine-building plants—from 70 to 200.

Among the problems that require an immediate solution in a machine-building complex a special position has been assigned to raising the level of economic work. In combination with the factors that have already been

mentioned (the lack of balance between the production plan and material resources, regular interruptions in material and technical supply, the poor preparedness for observing the requirements of state acceptance, and so forth), inadequate attention paid to the organization of really effective economic work has led to a situation where in the first half of 1987 the shortage of internal circulating capital at machine-building enterprises increased. Almost two-thirds of the plants and associations have above-normative supplies of commodity and material values. There was a 1.5-fold increase in the sum of fines, penalties and forfeitures that were paid and the sum of postponed payments more than doubled. Approximately half of the enterprises did not meet the condition for forming the planned economic incentive funds.

The changeover to complete cost accounting and self-financing aggravates these issues and makes it necessary to implement a well-thought-out system of measures for improving the economic and financial position at literally every enterprise and in every section of production. We are speaking about profound assimilation of the essence of the transformations that are taking place and of the very mechanism of self-financing by all categories of workers; the organization of real intrabusiness accounting in all structures and units of associations (enterprises); the implementation of the provisions of the Law on the State Enterprise (Association); careful development and coordination of the entire system of economic normatives; and the development of programs for updating and improving the quality of products, technical reequipment of production, and strengthening them with measures directed toward making items that are produced at a loss and enterprises that are operated at a loss into profitable ones.

In our opinion, in order for each collective to have a clear idea of the content, scope, and difficulties in solving problems and their own position in the restructuring of the work of machine building, it would be expedient to conduct certification of each association, enterprise, and scientific research institute. All production factors would be evaluated: the products produced, the means of production, and personnel. It is necessary to evaluate, on the one hand, the level that has been reached and, on the other, the future level from the standpoint of the requirements of the future.

The objectiveness of the evaluation can be ensured by enlisting in this work experts representing higher, associated, scientific, and even some other, say, nondepartmental units of the social structure. From the figures from the certification, in our opinion, it would also be possible to generate a concrete, more realistic comprehensive program for updating each association, enterprise, scientific research institute, and design bureau. Its implementation would essentially be the materialization of the concept "Restructuring" for a concrete unit of the machine-building complex.

Other variants might also be suggested. One thing is clear: the solution to the urgent problems of more rapid development of machine building should be primary.

And one other aspect. The solution to the crucial problems of more rapid development of machine-building should be an urgent cause not only for the machine-builders themselves but also for their associates—those who create and manufacture materials and batching items, builders, workers of planning and supply agencies, the USSR State Committee for Science and Technology, the USSR Gosstandart, the USSR State Committee for Prices, foreign trade departments, and party and trade union agencies. The attainment of a new level by domestic machine building is a nationwide task.

Footnotes

1. PRAVDA, 26 July 1987.

2. The proportion of each of the aforementioned factors in the reduction of the earmarked volumes of production, according to the estimate of specialists, is as follows: first—42 percent, second—3 percent, third—35 percent, and fourth—20 percent.

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TECHNOLOGY ACQUISITION, ASSIMILATION, COOPERATION

CEMA-Member Countries' Machinebuilding Priorities Listed

18230004 Moscow *EKONOMICHESKOYE
STRUDNICHESTVO STRAN-CHLENOV SEV* in
Russian No 11, 1987 pp 55-63

[Article by Ladislav Rzhiga, chairman of the Czech Statistical Directorate: "Acceleration of Scientific-Technical Progress"]

[Excerpt] In the Soviet Union great attention is being devoted to the timely and qualitative fulfillment of the tasks of the Comprehensive Program for Scientific-Technical Progress. They are reflected in the state plans. Specific measures have been defined, which the USSR ministries and departments and leading organizations are supposed to implement. The understandings, strengthened in the Comprehensive Program of Scientific-Technical Progress and the resolutions of the CEMA session (the 41st extraordinary session) are intended as the basis for the practical activity of the ministries and departments in accelerating scientific-technical progress and for economic, scientific-technical and industrial collaboration with other countries of the socialist community, based on specialization and cooperation.

Special sections are being foreseen for ensuring work throughout the whole cycle (scientific research-series production) with the necessary resource in the 5-year and annual plans of economic and social development of the USSR.

The understanding of the CEMA-member countries on agreed-upon actions in developing and using principally new types of equipment and technology through a concentration of efforts and organization of close comprehensive collaboration lies at the basis of realizing the Comprehensive Plan. In connection with this, the leading organizations and their co-executors face the task not only of creating separate models, but systems of machines, equipment and instruments. These should answer the demands of power-engineering, information, meteorological, design and use compatibility, and ensure the possibility of forming various systems based on a limited aggregate of unified blocs, modules, components and parts. This will serve as the prerequisite for large-scale production cooperation.

Broad use of the latest achievements of science and technology (including microelectronics, fiber optics, laser equipment, etc.) stimulates an increase in the nomenclature of machinebuilding products and a rationalization of production which requires definite borders. In connection with this, the agreed-upon actions of the countries of the socialist community on standardizing and unifying manufactured goods, establishing rational numbers and long-range parameters become highly urgent. A direct consequence of this is the need for closer interaction not only of the technical and production, but also the scientific potential of our countries.

An important question for the USSR is the change from the inefficient structure of foreign trade exchange with the fraternal countries. In conjunction with the restructuring of the USSR's foreign economic ties with the European socialist states, a reorientation of their specializations primarily toward the manufacture of non-metal intensive but science-intensive types of modern equipment is necessary. The import of machines and equipment from these countries for technical reequipping and reconstruction of Soviet enterprises should be implemented primarily as deliveries of complete sets. In addition, in the forthcoming period cooperation between the USSR and the CEMA-member countries should be broadened, and directed toward decreasing or stopping the import of separate types of machines and equipment from capitalist states. Attention will be concentrated on mastering production of modern, highly productive equipment previously acquired from these countries, including on the basis of agreements with the fraternal countries on the purchase of licences and the organization of joint enterprises.

Our countries face the task of increasing the technical level and quality of mutually delivered products on the basis of further improving mutual scientific-technical

collaboration, strengthening its mutual ties with production and its outstripping development of normative-technical guarantees. It is intended to restructure the system of international specialization and production cooperation.

Special attention will be devoted to the development of large-scale forms of cooperative interaction, on the basis of forming international production and scientific-production complexes in the fraternal countries for organizing large and efficient production and creation of export potential for entry into the market of the developed capitalist states. A significant growth of the efficiency of sectoral collaboration is planned for the long run, which should be based on the fraternal countries agreement for programs of long-term development and optimally combined interest of the existing country profiles.

Bulgaria: Hoisting-transport and agricultural machine and tool building, computer hardware, special technological equipment for the electronics industry.

Hungary: Buses, instrument building, medical equipment, computer hardware and communications, equipment for the service sphere, special technological and control-measuring equipment for the electronics industry.

GDR: Metallurgical and mining equipment, chemical and printing machinebuilding, tool, robot and shipbuilding, optics and articles of electronic engineering, computer hardware, light and food industry machine building, special technological equipment for the electronics industry, isothermics and railroad passenger cars.

Poland: Mining machinebuilding, equipment for the textile and food industry, construction-road building machines, tractors and light automobiles, shipbuilding.

Romania: Equipment for oil and gas extraction, freight and postal railroad cars.

Czechoslovakia: Tool building, small and large freight-handling trucks, diesel and electric locomotive building, power, atomic and metallurgical equipment, equipment for the light and food industry, articles of electronic engineering and special technological equipment for the electronics industry.

The improvement and development of the USSR's foreign economic ties will consist of:

Wide-scale comprehensive automatization of sectors of the national economy, full reequipping of the machinebuilding production base, introduction of leading technology;

Increased productivity of social labor;

Output of all machinebuilding products on a world technical level;

Essential strengthening of the technical-economic independence of the countries of the socialist community from imports from the capitalist countries;

Restructuring non-efficient structures of new progressive forms of collaboration, broadening and deepening production specialization and cooperation, significant growth of mutual deliveries of full sets of components and parts;

Guarantee of machine-building products on the basis of requirements of the most important sections of the economy.

Deepening and improving the collaboration of the CEMA-member countries in radical transformation of the economies of their countries will have a deep influence on all spheres of life and social activity, and will lead to a cardinal increase in labor productivity in the basic sectors of the national economy (first of all machinebuilding) and to the reliability, quality and competitiveness of the products produced and an increase in yield on capital. It will sharply decrease manual and low-skilled labor and will raise the general technological level and efficiency of production.

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RAIL SYSTEMS

Rail Transport Scientific and Technical Society Congress Report

18290051a Moscow GUDOK in Russian 21 Nov 87 p 3

[Article by A. Dalin: "Use Creative Potential"]

[Text] The Ninth Congress of the Rail Transport Scientific and Technical Society completed its work yesterday, 20 November, in Moscow.

One of the oldest societies in the country, the NTO [Scientific and Technical Society] of transport workers and transport builders today numbers 6,800 primary organizations in its ranks. These contain more than a half-million specialists, scientists and innovators. The congress delegates held an interesting discussion about how this enormous intellectual and creative potential is being used and how its activity should be reorganized during the branch's shift to complete cost accounting and self-financing in the coming year.

B. D. Nikiforov, NTO Central Board chairman and deputy minister of railways, devoted a great deal of attention in the Central Board's report to an analysis of the most important avenues in the work of the scientific and technical community. A set of problems, whose solution would permit Soviet rail transport to reach the highest labor productivity in world practices and to achieve the fullest satisfaction of the transport requirements of the national economy and the population, was examined.

The speaker called the task of learning to think economically — of evaluating the results from incorporating innovations and works from the viewpoint of cost accounting — the special duty of all NTO members. An economic approach permits the branch to mechanize and automate production more rapidly, effectively and completely; reduce manual labor; and, in the final analysis, bring in profit. It still frequently turns out, however, that stereotypes of yesterday's thinking are still alive among the specialists and even among the scientists.

The shutting of one's eyes and a complacent attitude on the part of NTO members toward the implementation of scientific and technical programs are being observed on the Sverdlovsk, Baykal-Amur, Far Eastern, Southwestern, October, and a number of other railroads. The speaker emphasized that it is necessary to achieve qualitative changes in management in order to help — not in words, but in deeds — the mainlines to shift to self-financing, using new forms for organizing the technical community's work.

The congress delegates listened with interest to the report of O. Pustokhod, the chairman of the NTO road board and chief engineer of the Belorussian Railroad. He talked about the participation of the scientific and technical community in the mainline's shift to complete cost

accounting. He said that self-financing required a psychological break for many. One must thoroughly justify special purpose programs for automating dispatch management, improving signal systems, increasing the carrying capacity of lines, etc.

Those, who spoke at the congress, talked about the need to look for and develop new forms for involving NTO activists in the carrying out of specific works; about the establishment of temporary scientific and production collectives based on the experience of the Belorussian, Baltic and Moscow railroads; and about the introduction of innovations on a competitive and contract basis.

N. S. Konarev, minister of railways, addressed the congress.

I. A. Shinkevich, chairman of the Railway Transport and Transport Construction Workers Union Central Committee, participated in the work of the congress.

The rail transport NTO was renamed the All-Union Scientific and Technical Society (VNTS) of Railway Workers and Transport Construction Workers. Changes in the society's regulations were also adopted at the congress.

G. M. Korenko was selected to be chairman of the VNTS of railway workers and transport construction workers.

08802

New Documentation-Distribution System

18290051b Moscow GUDOK in Russian 8 Dec 87 p 2

[Article by V. Korol, chief of the department for organizing the work of Ministry of Railways stations, and I. Buchin, chief of the Ministry of Railways economic department: "Cargo, Station, Railroad: Shifting to a New Common Network Marking System"; first paragraph is GUDOK introduction.]

[Text] USSR rail transport will shift to a new common network marking system for shipping documents (YeSR) in 1988. This is an important organizational and technical step directed toward the greatest improvement of the shipping process.

Let us recall that YeSR consists of the number symbols which are given to all railroad distribution points that are cleared for freight operations. The code of the common network marking system for the destination station, railroad car and cargo is entered on the railcar plate. It designates the address to which the dispatched product is travelling for unloading, sorting or transshipping. It is possible to determine the destination railroad and the network rayon, in which the destination station is located, from the YeSR.

From the freight car plates, the YeSR is transferred to train waybills and the sorting and other documents which are used in planning and organizing train and shunting work and in transmitting information. The station YeSR, which is now in effect, was introduced in 1975 and consists of four digits.

Five-digit station codes are entered in shipping documents (invoice, railroad record, back of the railroad record, and receipt). They differ from the YeSR only in the fact that another number from "0" to "9" is added to the right in them. "0" means that a given station is open for freight operations. The station codes, which have been listed in Tariff Guide No 4, are widely used during the processing of shipping documents for dispatch and arrival, the distribution of income from the shipments, the compiling of reports on loading and transport, calculating ton-kilometer work, etc.

The role and load, which the common network marking system and station codes have, is evident from this. One can also understand how accurately and correctly they should be written down in all the documents.

A great deal has changed since the introduction of the present YeSR and station codes on the network. New railroads have been formed, the boundaries between mainlines have been changed, new lines have been built, and many stations have been opened or closed. The reserve supply of codes has been exhausted. As a result, the system for clearly distributing their meanings among the railroads has been disrupted. It is now not always possible to determine accurately from them whether this or that station is related to which one of the symbols. In connection with this, it was necessary to bring these designations into a new system which would take into consideration not only the situation that had taken shape but also the prospects for expanding the network during the next 10-15 years.

An opportunity for effectively checking the reliability of the data, which was entered on documents, was also taken into consideration. For this check, additional numbers in the form of a last protective character from "0" to "9" were incorporated in the YeSR and station codes under the conditions of the automated control of the shipping process. They permit an error to be detected if the marking or code has been written incorrectly in the documents.

Thus, new five-digit YeSR and six-digit station codes have appeared. Just as before, the first two digits designate the number of the rayon and railroad to which the station belongs. The second two are its ordinal number in that region. The fifth digit "0" in the new code shows just as before that the station is open for performing freight operations. The fifth digit in the YeSR and the sixth one in the code are the protective characters.

The new documents have been distributed to each railroad. It is necessary that all stations, freight and technical offices, hub settlement freight offices, machine accounting stations, and the enterprises of industrial rail transport have them and that they be studied by all workers concerned.

The period for the shift from the old YeSR and station codes to the new ones will begin at 1800 hours on 10 December 1987 and end at 1800 hours on 5 Jan 1988. During this time, the new 6-digit codes will be indicated along with the old ones during the compiling of shipping documents in freight offices, and the common network marking system with a fifth protection character will be written down on the railcar plates. Shipping documents with only the old freight codes, which arrive on 31 December after 1800 hours, will be corrected in the freight offices of the destination stations. The new ones will be written in manually and the old ones crossed out. Only the old marking system will be used during the transitional period in automated control systems.

It is very important to adhere strictly to the special technology for the work of the stations during the transitional period itself, which will continue all told for about an hour after 1800 hours on 5 January. During this period, they will turn off all road and station computer center subscribers on the entire network in order to replace the old marking system with the appropriate telegraph answer-back corrections. At all stations, it is necessary to reduce as much as possible the losses connected with possible train delays and the slowing of the process of breaking down and making up consists due to the untimely compilation of train documents. Manual operations during the time that the automatic control systems are switched off should be reduced to a minimum.

A new Tariff Guide No 4 is being introduced with the shift to the new common network marking system. In compliance with this guide, the new station codes will begin to be used on 10 December of this year, and the calculation of tariff distances for determining transport remuneration — on 1 January of next year.

Besides the new six-digit station codes and new railroad codes, Tariff Guide No 4 contains a number of other changes. The number of transit points for calculating shipping tariff distances has been increased. The freight stations of the Moscow and Leningrad railroad hubs have been included in the number of transit points. The spelling (transcription) of the names of many stations has been made more accurate, and the list of cities and stations, which do not coincide in name, has been amplified.

The introduction of the new Tariff Guide No 4 and the new common network marking system will create additional opportunities for further improving the entire shipping process.

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10 May 88